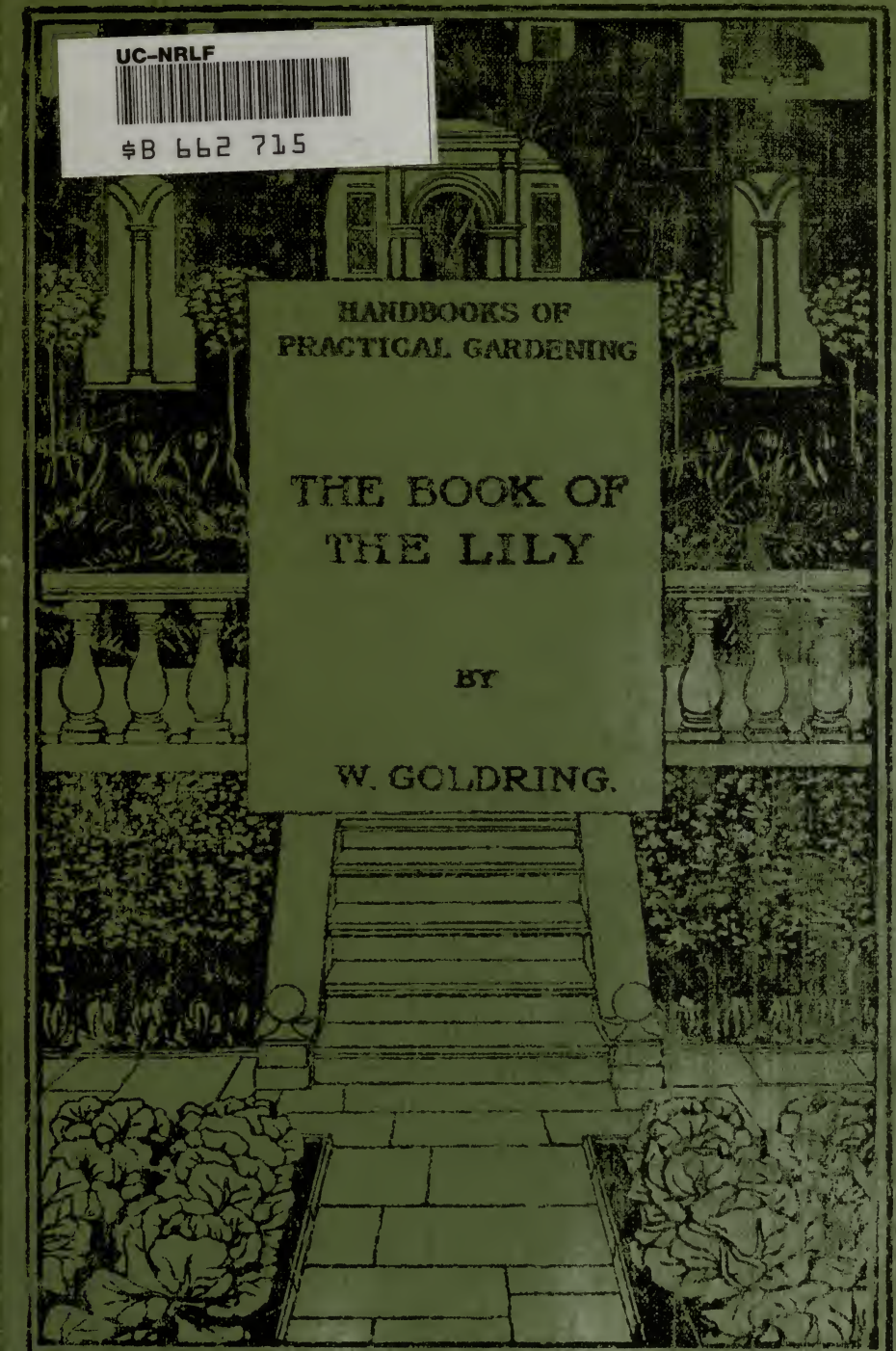

HANDBOOKS OF
PRACTICAL GARDENING

THE BOOK OF THE LILY

BY

W. GOLDRING.

HANDBOOKS OF PRACTICAL GARDENING—XVII
EDITED BY HARRY ROBERTS

THE BOOK OF THE LILY

THE HOME OF JAPANESE LILIES IN THE HAKONE MOUNTAIN DISTRICT, JAPAN

THE BOOK OF THE LILY

BY

WILLIAM GOLDRING

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INTRODUCTORY

"Give me swift transportance to those fields
Where I may wallow in the Lily beds."—TROILUS AND CRESSIDA.

"To gild refined gold, to paint the Lily,
To throw a perfume on the Violet
. . . . . .
Is wasteful and ridiculous excess."—KING JOHN.

IN many of his writings Shakespeare alludes to the Lily as the embodiment of purity and loveliness, and we to-day still echo the praises of the queenly flower which so charmed the master of song, doubtless having in his mind the White Madonna Lily, which for centuries has been a joy and a treasure of English gardens, great and small.

The Lilies share with the Irises the distinction of being written about in separate handbooks of this Series. They are worthy of it, for are they not among the most beautiful denizens of our gardens?

To write a book all about the Lily is an undertaking that even the most experienced grower of Lilies would approach with some feeling of diffidence, knowing, as he does full well, that no man can know all about them and of their behaviour in cultivation, under the varied conditions of climate that inevitably occur even in these our small British Islands. Neither is there in any part of the world any one garden where all the kinds of Lilies thrive to perfection, as that is an ideal never to be realised,

nor can it be reasonably expected. How is it possible for the wildlings from the Californian forests and mountains, from the plains of Europe, from the far-off regions of the mighty Himalayas and the wooded valleys of Japan, to find in the small area of a British garden all the subtle conditions of natural environment that for countless ages they have enjoyed?

Such is the fact, but true though it be, let it not discourage the would-be Lily grower. On the contrary, it should encourage and stimulate him in his attempt to overcome the difficulties that beset Lily culture, and attain results which all of us who have experience among Lilies know will repay any amount of patient care.

The author of this modest treatise on the Lily approaches his subject with the feeling that he has no right in assuming to dictate to others in a matter upon which he himself feels that he is still only a student under probation. But having been intimately associated with Lilies for thirty years, grown them in his own garden for many years, seen them growing under various conditions in gardens in all parts of these islands, and enjoyed the rare privilege of studying them growing in a wild state in Europe, California, and Japan, he offers the results of his experience in the hope that they may be helpful to others, and especially to that ever-increasing class of garden lovers who yearn after the delights of Lily culture, but hesitate to embark upon the cultivation of plants that by repute, which has wellnigh ripened into tradition, are a family, in the culture of which the disappointments far outweigh the successes. So the Lilies as a class have been maligned, and, therefore, it is the aim of the writer to state facts in regard to them as plainly as he can, withholding nothing that he knows, but conscious that he himself has yet much to learn of their vagaries and caprices when under cultivation in these islands.

The plants that are written about here are what are known as the true Lilies. These have no close relationship with other plants popularly called Lilies, such as Water Lily, Lily of the Valley, Mariposa Lily, St Bruno's Lily, and so forth, but are a distinct family or genus differing more or less from other genera in the same natural order to which they belong—the Liliaceæ.

All the species are herbaceous, that is they never have woody stems. All are perennial, that is they have bulbs that produce continuous growth from year to year though the stems are of annual duration. The bulbs differ from those of most other bulbous plants because they are composed of more or less fleshy scales attached to a central axis or depressed stem. This fact underlies the whole secret of Lily culture, for the bulb scales constitute the most vital parts, as they protect and sustain the bud or germ, which is the seat of active growth.

If these protecting and feeding bulb scales are maintained in a healthy condition, all is well with the plant beyond the influences which control the growth above ground.

These scaly bulbs are the reason why Lilies are more difficult to cultivate and more susceptible to injury than other classes of bulbs which, like the Onion, Daffodil, Tulip, Snowdrop, are provided with scaleless or what is technically termed tunicated (coated) bulbs. In such bulbs the parts analogous to the bulb scales in Lilies consist of fleshy tunics or coverings of the central axis which is enwrapt by them. Consequently all bulbs bearing scales instead of tunics are more difficult to deal with under culture.

Some of the Fritillaries have likewise scale-bearing bulbs exemplified by the Crown Imperial (*F. imperialis*), and similarly to the Lilies some of the species are extremely difficult to cultivate, as, for instance, the Scarlet Fritillary of California (*F. recurva*).

Bulbs without scales may be dealt with even in a careless way without much detriment to the bulb. Thus Daffodils, Tulips, and Snowdrops, and such-like common bulbs, may be kept for months and even a year or longer in a dry state out of the soil, and when planted will develop growth more or less strongly. Not so with Lilies and other scaly bulbs. Their bulbs soon perish or become irretrievably weakened if allowed to become dry. This fact cannot be too strongly impressed upon would-be cultivators of Lilies, and so important it is that it should be printed in red letters. Bulbs of some of the more delicate Lilies will suffer if left in a dry state for even a few days; the scales shrivel, and the strength of the bulb is thereby impaired.

As to the duration of Lily bulbs there can be no definite assertion made on that point. It has long been a matter of controversy among Lily specialists, some contending that the parent bulbs are perennial if healthy, others that the parent bulb of some species is annually replaced by new bulbs developed either by division or offsets. This, however, does not greatly concern the tyro in Lily culture. Whatever may be the behaviour of bulbs under the artificial conditions of cultivation, it may be assumed that in a state of nature their increase or continuity of growth is maintained by the splitting up of the parent bulb as well as by bulblets, seed, and stem bulbils.

These methods are nature's way of continuing the growth and increase of the species, and it is well for the cultivator to know it, as natural conditions should be his guide.

Geography of Wild Lilies.—Lilies are essentially northern world plants, and are native to a zone extending from the extreme east in Japan to the extreme west in California.

This Lily zone is comparatively narrow, as the northern

limit is Siberia and Canada and the southern the Neilgherry Hills in India. In this zone there occur three main centres, and beyond these are to be found species that have strayed from the concentrated areas. These central areas are California, Europe, and the far east Japan, China, and India, including Burmah. The Lilies beyond the central areas are few, and sometimes they have affinity with the species comprised in the crowded areas, sometimes not.

For instance, the Canadian Lily (*L. canadense*) has affinity with the extreme Western species such as *pardalinum* and *superbum*, while the species in the Eastern States of America, such as *philadelphicum* and *Catesbœi*, are related more closely to the European and Eastern species.

This wide geographical distribution of the genus gives rise therefore to Lilies of extremely diverse character, though all agreeing in the botanical characteristics of the genus.

The range of growth runs parallel with other distinguishing characters. Thus from the stately form of the Giant Lily of the Himalayas (*L. giganteum*), which rises ten to fifteen feet high, there is every grade of stature to the humble growth of the dwarf Japanese varieties of *L. elegans* a few inches high only, but otherwise in every essential detail all are true Lilies.

Form of flower and size also have a wide range from the huge Trumpet Lilies of the Far East to the tiny flowers of the Californian *L. parvum* of the extreme West. Colour variation in the flower is not so remarkable; white, yellow, and orange to brilliant scarlet is the chromatic scale; and though there are no actual blues, the painter has to use blue on his palette to paint faithfully the subtle tints of several Lilies.

A Lily is recognised as a Lily wherever met with in any part of the world. The scaly bulbs, the erect stems,

the leaves varying from grassy narrowness of *L. tenuifolium* through all the widths and lengths to the massive, heart-shaped leaves of *L. giganteum;* the flowers with always six segments or petals, with long or short stamens with anthers balanced on them, all proclaim the Lily. The only genus with which it can be confused is the Fritillaria, but the distinguishing characters are too technical to describe here. So intimate, indeed, is the relationship of the Lilies to some of the Fritillaries, that botanists even now are undecided as to which genus some of the species belong.

From the Amaryllis family, which includes the Common Daffodil, the Lily is known by having the seed vessel above the bases of the petals, instead of below, as in the Daffodil and Snowdrop.

Such is the botany of the Lily simplified, and will be sufficient for the amateur cultivator until he gathers knowledge from experience, which invariably creates a thirst for wider knowledge; and when this inquisitive stage is reached he will find gratification in the works on Lilies written by master pens, such as Elwes' sumptuous "Monograph on Lilies," Baker's "Review of the Order Liliaceæ," and the more fragmentary writings on the genus in the various "Floras," or the botany of Europe, Asia, and America.

In a book of this kind, however simply and devoid of technicalities an author may wish to convey his knowledge to his readers, it is impossible to avoid the use of terms and names common to botanical and horticultural writing; and therefore no apology is asked for the use of such terms as are embodied in the following pages, which are written only with a view of rendering the text intelligible and accurate, and so few terms are given that are not in common language that the author is of the opinion that a glossary of terms is unnecessary.

The History of Lilies in English gardens is interest-

THE SIBERIAN ORANGE LILY, L. DAURICUM

ing, as it runs parallel with the history of geographical knowledge. Before far-off countries were known and explored, Lily culture in England was naturally restricted to the species native of Europe. Among the Lilies that first found their way to our gardens from the South was the White Lily (*L. candidum*), and records tell us that it came northwards in 1596; and this fact strengthens the supposition that Shakespeare alludes to this particular Lily in his plays and poems, for he would be at manhood about the time of its introduction. It was no doubt first cultivated in the gardens of the royal and the rich, and it is quite possible that Elizabeth and her courtiers may have plucked flowers from the same stock from which has descended the common White Lily of to-day still, and always will be, cherished by rich and poor alike.

Before the introduction of the White Lily there appears to have been no Lily in English gardens, and its advent must have created as much interest as the introduction from foreign lands in later times of a new and beautiful Lily.

Following the White Lily to our gardens were the Martagon Lily, the Orange Lily, the Scarlet Turk's Cap, the Davurian Lily, and others from Central and South Europe; and these were doubtless favourites in Tudor and Jacobean gardens.

During the eighteenth century the list of garden Lilies was added to at wide intervals, but it was not until about the middle of the last century that the great influx came, concurrent with gold discoveries in California and the opening up of China and Japan to Europeans. It is an interesting fact that wherever the Englishman goes to a foreign country or colony, he does his utmost to introduce to his new home the flowers of his native land, which to some extent compensates for exile, for with the flowers of his old home about him they recall the scenes of his youth. So also does the Englishman, with his

commercial instinct, endeavour to transmit to the old country the flowers of other climes, and this he has been doing ever since newly discovered countries have afforded him the opportunity.

We owe much to the men of the last century, to those especially who, in the early 'forties and 'fifties down to the present time, explored the wilds of California, the garden treasures of Japan, which had existed unknown to Western peoples probably for centuries. These men, at the risk of their health and often their lives, did their utmost to enrich our gardens with the flower treasures of other countries. Not only have botanists who explored and collected for the sake of science and commerce added to our Lily treasures, but also all sorts of conditions of men, including the opposite extremes of soldiers and missionaries, devoted themselves to this interesting work.

The world has been ransacked probably of what is best among Lilies, though still we may always expect much from the unexplored regions of China and adjacent unknown tracts; and when nature has yielded up to our garden delights all the wildlings she possesses, then art must be relied on to give us novelties in the way of seedling variations and hybrids.

CHAPTER II

SYNOPSIS OF THE GENUS LILIUM

ACCORDING to Mr J. G. Baker, the botanical authority of the order Liliaceæ, the genus is divided into five groups or sub-genera, distinguished from each other principally by the shape and arrangement of the flowers. The names of each sub-genus, its prominent features, and the principal cultivated species grouped under it, are briefly given as follow:—

SUB-GENUS 1. *Cardiocrinum.* (Heart-leaved Lilies.) Flowers funnel-shaped, leaves stalked, heart-shaped, ovate.

Lilium cordifolium.
,, *giganteum.*

SUB-GENUS 2. *Eulirion.* (True Lilies.) Flowers funnel- or trumpet-shaped, large, mostly white or of light tints.

Lilium Brownı.
,, *candidum.*
,, *japonicum* (*Krameri*).
,, *longiflorum.*
,, *Lowi.*
,, *neilgherrense.*
,, *nepalense.*
Lilium Parryi.
,, *primulinum.*
,, *philippinense.*
,, *rubellum.*
,, *sulphureum.*
,, *Wallichianum.*
,, *Washingtonianum.*

SUB-GENUS 3. *Archelirion.* Flowers large, open, and spreading. Included in this section are some of the finest and most attractive species.

Lilium auratum.
,, *Henryi.*
Lilium speciosum.
,, *tigrinum.*

Sub-genus 4. *Isolirion.* (Upright-flowered Lilies.) Flowers erect, more or less cup-shaped, and generally early in expanding.

Lilium bulbiferum.
,, *Catesbæi.*
,, *concolor.*
,, *croceum.*
,, *dauricum.*
Lilium elegans.
,, *medeoloides.*
,, *philadelphicum.*
,, *pulchellum.*

Sub-genus 5. *Martagon.* (Turk's Cap Lilies.) Petals reflexed as in the common Turk's Cap Lilies.

Lilium avenaceum.
,, *callosum.*
,, *canadense.*
,, *carniolicum.*
,, *chalcedonicum.*
,, *columbianum.*
,, *Grayi.*
,, *Hansoni.*
,, *Heldreichi.*
,, *Humboldti.*
,, *Jankæ.*
,, *Kelloggi.*
Lilium Leichtlini.
,, *maritimum.*
,, *Martagon.*
,, *monadelphum.*
,, *pardalinum.*
,, *parvum.*
,, *polyphyllum.*
,, *pomponium.*
,, *pyrenaicum.*
,, *superbum.*
,, *tenuifolium.*
,, *testaceum.*

THE WHITE LILY GROWING AMONG ROSEMARY AT SANDHURST

(The bulbs have not been disturbed for ten years)

CHAPTER III

DESCRIPTIVE AND CULTURAL NOTES

THE Lilies known and cultivated in English gardens are enumerated below with descriptive notes on the species and varieties, and hints upon their treatment under culture. These cultural notes are given as a guide to the Lily culture under ordinary conditions of soil and climate in these islands, but under particular conditions they must obviously be modified.

For example, in an abnormally wet or dry district the treatment of Lilies varies from that advised for normal conditions.

In the naming of the species and varieties, the system adopted at Kew in the hand lists has been followed, whether considered by specialists to be right or wrong, Kew is, in the opinion of the author, the proper authority to follow in all cases of plant nomenclature in this country.

L. auratum (Golden-Rayed Lily).—When first introduced to England from Japan in 1862, this Lily excited great interest in this country, owing to its magnificent blossoms, and their distinctness from any other kind. It still remains one of the most popular Lilies. Enormous quantities of bulbs of it are sent to this country from Japan every year, as it cannot be cultivated successfully in Holland on a large scale, as so many Lilies are.

When grown to perfection, *L. auratum* is certainly the grandest of all Lilies, but unfortunately it is very capricious in its requirements, and failures in growing it satisfactorily are far more numerous than the successes.

It is perfectly hardy in most parts of this country, and the conditions most favourable to it are a well-drained soil consisting of peat or leaf mould and sand, and a position where partially protected from the cold winds of spring and the direct rays of the sun later on.

Owing to this they are often planted in rhododendron beds; and if the rhododendrons do not consist of the very vigorous varieties and are not planted too closely, this Lily will often do well. Dwarf and less spreading shrubs that need the same soil as rhododendrons, such as the smaller azaleas, vacciniums, pernettyas, and kalmias, as well as the Alpine kinds of rhododendrons, agree well with this Lily, and in planting it among these there is less danger of overcrowding.

The flowering season of *L. auratum* out of doors extends from July till mid-autumn. Individual variations of height, foliage, contour of the flower and its markings, occur plentifully in the case of this Lily, while among them are some well-marked and very beautiful varieties.

Chief among those named are *pictum*, in which the petals are freely spotted with crimson, while the central stripe is suffused with the same tint; *macranthum*, also called *platyphyllum*, is a robust growing form in which the stem is stouter and attains a greater height than the type. The leaves are much broader, and the massive flowers are more shallow. They are as a rule less spotted than in the type.

Two varieties that afford direct contrast to each other are *rubro-vittatum*, which has a bright crimson band down the centre of each petal, and *Wittei*, also called *virginale*, which has a pure unspotted flower with a light yellow band.

What is known as the type, that is the wild plant, has narrow leaves and large flowers, always with a golden band down each petal, which are more or less copiously spotted with reddish brown.

L. avenaceum.—A pretty small growing Lily, a native of Japan, Manchuria, and Kamtchatka, but owing to its delicate constitution is rare in cultivation. The red, drooping flowers with their reflexed tips remind one of *L. tenuifolium*, but the bulbs are very different, those of *L. avenaceum* consisting of small oat-like scales, while in *L. tenuifolium*, though the bulbs are small the bulb scales are fewer in number, and comparatively large. It can only be recommended to the Lily specialist, not for general cultivation.

L. Brownii is one of the finest and most satisfactory Lilies. What is regarded as the type of this Lily or rather that which has been cultivated by the Dutch for the last fifty years or more is of obscure origin. It reaches a height of two to three feet; the flower stem is tinged with reddish brown and is bare of leaves for some distance from the base. The leaves are long, narrow, gracefully recurved, and of a deep green tint.

The flowers, usually solitary, are long, trumpet-shaped, and of a thick waxy texture; inside they are ivory white, but are so heavily suffused with chocolate on the exterior that the unopened buds are almost entirely of that tint, particularly when grown in an exposed spot. It is a good lily for planting under conditions similar to *L. auratum*, and also for pot culture. The Lily known as *L. Brownii odorum*, *L. odorum* and *L. Colchesterense* differs from the type in the leaves, being shorter, broader, much thinner in texture, and of a pale green, while the flowers are not so long. The exterior of the bloom too is not so heavily tinged as in typical *L. Brownii*, and when first expanded the inner faces of the petals are of a creamy tint, becoming white later. The Lily is at Kew named *L. japonicum Colchesterense.*

L. Brownii leucanthum reaches a height of four feet,

the stem being green while the flowers are white, shaded with yellow.

L. Brownii Chloraster differs from the preceding in its brown-tinted stems, narrower leaves, as well as in green-tinged flowers. The last two varieties are at present rare. All the forms of *L. Brownii*, except the type, are natives of Western China, and probably the type was introduced first from China also. In this country it flowers usually in June or July.

The varieties *platyphyllum* and *viridulum* have been described, but they are either very rare or do not exist in cultivation in this country.

L. bulbiferum.—This handsome Lily is one of the best for an ordinary border. It reaches a height of three to four feet, and bears a head of deep, orange-red flowers. It is among the earliest Lilies, being at its best at the end of May or early in June. It bears a resemblance to some forms of *L. dauricum*, but it can be readily distinguished by its less crowded head of blossoms, brighter tinted flowers, and especially by the small bulbils always produced in the axils of the leaves. From this character of producing bulbils the specific name was given to it. It is a very old plant in gardens, and is a native of Central Europe. It grows well in ordinary garden soil in an open position.

L. callosum.—A very pretty Lily of small growth, having scarlet drooping blossoms produced early in the season. It is a native of Japan, and much resembles *L. tenuifolium*. Though introduced in 1840, it has never become common, and, owing to the difficulty in growing it satisfactorily, it is seldom seen in gardens.

L. canadense—The Canadian Lily was one of the first to reach English gardens from America. It belongs to the group having the peculiar rhizomatous or creeping bulbs, which form a spreading mass. It needs a moist peaty soil, and a situation where partially shaded from the

direct rays of the sun. It has stems from two to three feet high, with regular whorls of leaves. The flowers are broadly funnel-shaped, drooping, and about two and a half inches long, and several are borne on each stem. In flower colour there is a good deal of variation from yellow to deep red. The varieties *flavum* and *rubrum* are yellow and deep red respectively, and there are intermediate shades. It flowers in July and August.

L. candidum.—The common White or Madonna Lily is regarded by most Lily lovers as the most beautiful of the genus. Being one of the oldest of English garden plants and so common, it is known to every one, and many a cottage garden in country places provides from it in June and July such a floral display such as one seldom sees in mansion gardens, where it is often a failure, caused, it is generally understood, by some fungoid disease. Important advice to all who attempt to grow this Lily is to leave it alone when once established, as it much resents disturbance at the roots. Cottagers do not disturb the bulbs, and this is why they succeed where gardeners fail. If necessary to transplant, this should be done immediately the flower stems die down —that is to say, in the month of August, for in the case of *L. candidum* not only the roots but the leaf growth becomes active about this time. The purest whiteness of the flowers is intensified by the yellow anthers, while their delicious fragrance is not equalled by any other Lily.

The Madonna Lily is a native of Southern Europe, and was introduced as long ago as 1596. There are several varieties, viz., *foliis aureo-marginatis*, leaves deeply bordered with golden yellow; *spicatum*, known also as *flore plenum* and *monstrosum*, is a curious, but not attractive form, the petals being almost suppressed; *striatum* has the flower streaked with purple; and *peregrinum* has a purplish stem and narrow leaves and

petals. *L. candidum speciosum* is the name given to an early flowering variety chiefly imported from Holland and the south of France. The imported bulbs from France are reputed to be more prone to disease than other varieties. The common kind has far the finest flowers, and sometimes reaches a height of six feet.

The soil most suitable for *L. candidum* is a rather stiff loam. It should be placed in an open, fully exposed place, as it fails in shaded spots, particularly if damp.

L. carniolicum.—One of the Turk's Cap Lilies, growing about three feet high. It bears a number of small red flowers early in June. It grows well in ordinary garden soil, but is not commonly cultivated, probably because it is difficult to obtain, and because the flowers are not nearly so bright as those of *L. pomponium*, which it resembles. It grows wild in Lombardy, Dalmatia, and Bosnia.

L. Catesbæi.—A rare Lily, nearly related to *L. philadelphicum*, and like it is difficult to keep in health for long. It has a small globular bulb with loose scales, and the slender stem rises about eighteen inches. The flowers are generally solitary and from three to four inches across. The colour is red spotted with purple, and is one of the most beautiful of the smaller Lilies.

It is not only capricious in behaviour under culture, but somewhat tender, as it is a native of South Carolina.

A cool, fairly moist, and partially shaded spot, and a soil of sandy peat suits it best in parts where it thrives.

L. chalcedonicum (Scarlet Martagon or Turk's Cap).—One of the oldest Lilies in English gardens, and among the most brilliant in colour. It grows to a height of three to four feet, the stem being thickly beset with pale narrow leaves. Its flowers expand towards the end of July and are borne in loose clusters. They are small but symmetrical in shape with recurved petals, which are bright red and waxlike, but the odour is not pleasant.

LILIUM EXCELSUM

The variety *major* or *excelsum*, known sometimes as *maculatum*, is a particularly large growing form. It succeeds best in what is termed a good kitchen garden soil, but it thrives in a heavy soil, and even clay, if it is properly drained.

Like many others of the Martagon group it resents being disturbed when once well established. When transplanted, the first season's display of flowers is generally a poor one.

When removal of the bulbs is necessary, it should be done by the middle of October at the latest, for the roots start early into growth, and as they are few, root injury should be avoided.

This old Lily and *L. candidum* are often seen best in old-fashioned country gardens, not worried by cultivation, and where the disease has not reached the locality. The Scarlet Martagon is a native of Greece, and has been grown in English gardens for over a century.

L. columbianum (the Oregon Lily).—Though not very rare is not a common Lily in gardens. It grows wild in the elevated plains of Oregon and British Columbia. The flower stem grows about two feet, and bears pendulous flowers with recurved petals on a bright golden yellow, usually towards the end of July. It needs a soil with a good proportion of peat and sand, and thrives best in a sheltered position.

It is, by some writers, regarded as a miniature form of *L. Humboldti*, but it differs from that Lily in many well-marked characters. It is also known as *L. nitidum*.

L. concolor.—A charming little Lily known also as *L. sinicum*, and there are several forms of it in cultivation. The bulbs in all the forms are small, and from each one two or three flower stems are generally produced. These grow a foot to eighteen inches high, and bear several erect, open, star-like flowers about two inches across, wax-

like in texture, and bright scarlet. It is at its best in July. The varieties vary in colour; the most distinct are *Coridion*, in which the flowers are of a clear rich yellow tint, and *pulchellum*, a deep crimson with narrower petals. *Buschianum* and *Partheneion* are names given to varieties that differ more or less strongly from the type.

Until within the last few years, *L. concolor* and its varieties were considered difficult to grow, but now no particular difficulty is experienced in growing them well. A loamy soil lightened by peat, leaf mould, and sand in a fairly moist but well-drained spot will suit it well, while partial shade is also beneficial. For cool parts of rock gardens it is a charming Lily. It is a widely distributed Lily in a wild state, occurring in Siberia, China, and Japan.

L. cordifolium.—This is a near relative of *L. giganteum*, but a much inferior plant in flower beauty. It differs from its Indian relative in being a much smaller plant. Instead of having very large bulbs, they do not exceed the size of a hen's egg, and the leaves are more distinctly heart-shaped, and of a deeper green, frequently tinged with red. The flower stem grows two and three feet high, and bears in July several tubular-shaped flowers of a greenish white hue. *L. cordifolium* requires a cool, sheltered spot such as suits *L. giganteum*. As it is a rare species, it is best to treat it as a pot plant and wintered in a cold frame. It is a native of the Japanese and Kurile Islands.

L. croceum (the Orange Lily).—A favourite Lily with all, and particularly treasured by cottagers, who grow it as freely as they do the White Lily. It is one of the upright flowered section, and is at its best towards the end of June and early part of July, following in flower the several forms of *L. dauricum* (*umbellatum*), which it somewhat resembles, though the flower heads are not so dense and the flower colour is more yellow. They last

longer than those of *L. dauricum*, as they are firmer in texture and substance.

The variety *Chaixi* is dwarfer than the type or common form. It grows well under the same conditions as *L. chalcedonicum*, and will flower well the first season after planting. It is a native of Switzerland and Northern Italy, and is much planted in the north of Ireland, as it flowers about the time of Orange celebration on July 12th. It is also known as *L. aurantiacum*, but the name is not used here so much as on the Continent.

L. dauricum.—The Dahurian Lily, otherwise known as *L. davuricum* and *L. umbellatum*, is a puzzling Lily to many in regard to its name, and the confusion has arisen in this way. The Lily was originally introduced from Siberia, and named *L. davuricum* by one, *L. spectabile* by another. After it had been cultivated for some time, the Dutch growers began to raise it from seed, and thus gave rise to a number of varieties more luxuriant in growth than the original wild plant. These varieties were classed under the name of *umbellatum* on account of umbel-like head of flowers, but even the most distinct of these bear all the essential characters of *L. dauricum*, and therefore the name *umbellatum* is suppressed here, although some trade catalogues still rank the varieties of *dauricum* under *umbellatum*. Others, including some of the largest Dutch growers, class all under *dauricum*.

It is a common Lily, so that it is hardly necessary to describe it in detail. It has small bulbs, stems two feet or more high according to the vigour of the variety, leaves narrow, and large open flowers, erect, six to eight or more in a terminal cluster, and varying from pale orange to orange-red in the various forms. The typical plant, that is, the wild plant, is more slender in growth, with smaller flowers and shorter leaves than the luxuriant growing varieties, and more resembles the European *L. bulbiferum*, but without the bulbils on the

stem. This Lily has no doubt been intercrossed with *L. croceum* and *elegans*, and this has resulted in varieties differing more or less from the forms raised direct from *dauricum* and known as *umbellatum*.

It is a very hardy and free-growing Lily, flowering in June and July, and suitable for open borders in ordinary soil. It is a bright June border Lily, but not so elegant as others.

The varieties are numerous, and among them the most distinct are the following:—

erectum, orange-scarlet, early.
grandiflorum, large flowers, scarlet and orange.
incomparabile, the richest in colour, deep crimson.
maculatum, deep orange and spotted, tall growing.
multiflorum, usually more flowers than others, orange-red.
Sappho, light orange yellow, tipped with red.

The forms that appear to be related to *L. croceum* and *L. elegans* are:—

aurantiacum, orange-yellow.
Cloth of Gold, rich yellow.
Sensation, orange red.
Tottenhami, bright yellow, large heads of flowers.

L. elegans, frequently known as *L. Thunbergianum*, is a Japanese species belonging to the upright flowered section, and succeeds under the same conditions as *L. dauricum*. It is remarkable for the great number of its varieties, which not only vary in colour but height and season of flowering. It has large erect flowers cup-shaped as in *L. croceum*, but less vigorous in growth. Some of the varieties grow only six inches high, while the stronger kinds are thrice as tall. Most of them flower during the latter half of May and during June, but there are some which flower later.

The best varieties are—

LILIUM SPECIOSUM RUBRUM

Alice Wilson, very dwarf with clear lemon yellow flowers; *alutaceum*, one of the earliest and dwarfest, with bright apricot-coloured flowers; *atrosanguineum*, deep red, moderately tall; *Beautiful Star*, orange red; *bicolor* or *pictum*, rich yellow flamed with red; *flore plenum*, a dwarf form with deep red semi-double flowers; *Horsmanni* or *hæmatochroum*, rich blackish crimson, one of the finest of all; *biligulatum* (*lateritium*), chestnut red; *marmoratum aureum* or *robustum*, two feet high, deep yellow flowers spotted with crimson early in June; *Orange Queen*, a fine flower of a clear bright orange; *Prince of Orange*, apricot yellow, very dwarf and early; *sanguineum*, light red; *Van Houttei*, bright shining crimson and very attractive; *venustum*, orange red, flowers produced late in July and August; and *Wilsoni*, apricot yellow, dotted purple, also late flowering.

Batemanniæ is a very distinct variety sometimes classed as a species, but here as a variety. Nearly all the Lilies with erect open flowers bloom early in the season, but this exception is at its best in the first half of August. It grows about a couple of feet high, and the flowers are borne from four to six in a terminal umbel or cluster. They are of an unspotted, glowing, apricot tint, from three to four inches in diameter. It succeeds well in ordinary soil and a full exposure. It is very liable to lose its stem leaves during a cold and wet summer.

Wallacei.—A variety from Japan, is a peculiar Lily bearing resemblance to *L. elegans venustum*, but differs in its more drooping flowers, which are of a clear apricot yellow. It is remarkable also for the way in which its bulbs are divided into several crowns so that stems are developed from each. These differences so marked have induced some to rank it as a distinct species intermediate between *elegans* and *tigrinum jucundum*, but at Kew it is classed as a variety of *L. elegans*. It grows about one and a half feet high like *venustum*, and is beautifully in

flower generally about the first half of August. It grows well under the same treatment as *L. elegans*.

The bulbs of nearly all the varieties of *L. elegans* are relatively small, yet they flower freely the first season after planting.

L. giganteum.—This noble Lily, were it not for *L. cordifolium*, would be unique among Lilies on account of its stature and broad leaves. It is a handsome foliage plant when not in flower, and when its tall flower-spikes are matured it is indeed a stately Lily.

The bulbs when fully grown are very large, and the scales are formed of the bases of the leaves. When about to flower the entire central portion of the plant is pushed upwards so that when the stem dies down only the outer shell of the bulb remains, the continuity of bulb growth being ensured by two or three new bulbs that form at the base of the old flower stem. In the finest specimens the flower stem often reaches a height of ten to twelve feet. On the upper part are the long tubular-shaped flowers, frequently ten or a dozen opening in succession. The colour is pure white tinged on the outside with green and inside with purple.

The place most suitable for the perfect development of this grand Lily is a spot sheltered and partially shaded by trees, and in a very deep soil containing a good proportion of sandy peat, hence it is often grown best in rhododendron beds. In colder districts it needs the protection of a greenhouse, and if it can be planted out in a greenhouse border it will flourish to perfection. A point necessary to observe in planting this Lily is that flowering-size bulbs are often sent here from Holland for sale during the winter, which, when planted out or potted, push up their flower stems the next season, but owing to the few roots that have formed, the resulting flower stems are seldom or never satisfactory, the growth being stunted and the flowers imperfectly

developed. The only way to ensure success is to grow the plants on from small bulbs in the place where they are to flower. Three or four seasons may elapse before the small bulbs flower, but when they do flower their grandeur will repay the patience of waiting. Once established, the offsets from the flowering plants are sufficient to keep up a stock. Native of the Himalayan region.

L. Grayi.—A near ally of *L. canadense*, with which it is often confused, being of similar growth and with foliage in whorls on the slender stems. It differs principally in its more thimble-shaped flowers, which are a rich red colour spotted with maroon. It flowers at the same time and flourishes under similar conditions to *L. canadense.* It is a native of the Roan Mountains in North America, and may be only a southern form of the northern Lily. It is a beautiful and satisfactory Lily to grow in a moist peaty soil.

L. Hansoni is a Japanese Lily in every way desirable, being not particular in its cultural requirements and extremely handsome in flower.

It belongs to the true Martagon group, in which the leaves are borne in regular whorls. It is one of the earliest of all Lilies to appear above the ground in the spring, and flowers about the end of June.

The stem reaches a height of four to five feet, and the flowers, generally several, are a couple of inches across, and regularly reflexed, the petals being of a bright orange colour spotted more or less with brown, and of an unusually thick, wax-like texture.

It needs much the same treatment as *L. auratum*, but will grow well in loam. It is a good plan to plant it among low growing shrubs, in such a way that the young shoots are protected in early spring, as it is the first to push up its new growth.

As the stems grow they overtop the shrubs at flower

time. It should be planted where the flowers are somewhat shaded from the full sun, as they are liable to become bleached and lose their rich yellow colour.

Unlike most of the Martagons, it will flower well the first season after planting. It thrives under pot culture, and being devoid of the heavy perfume of most of the Turk's Cap Lilies, it may be enjoyed in the house.

L. Heldreichi.—A rare Lily intermediate in character between *L. carniolicum* and *L. chalcedonicum.* The stem, thickly set with narrow leaves, grows two to three feet high, and the flowers are of a bright reddish yellow. A native of the Mountains of Greece, it thrives in a loamy soil in a partially shaded place.

L. Henryi is among the finest Lilies. Though introduced from Western China as recently as 1888, it soon became well known in English gardens and has proved an invaluable garden plant, vigorous in growth, not particular in its requirements, and very seldom fails even in the worst seasons. It so much resembles *L. speciosum* in the form of its flower that it was at first known as the yellow speciosum, but it differs in technical points widely both from *L. speciosum* and *L. tigrinum.*

Under cultivation in this country it has far exceeded in height and vigour any specimens in a wild state, as it reaches a height of six to twelve feet in the Conservatory at Kew, and bears as many as thirty flowers on a stem. In shape and general appearance the flowers resemble those of the white variety of *L. speciosum* known as *Krætzeri*, but are of a deep orange yellow, which is intensified by the unusually rich green of the foliage. It flowers in July and August out of doors, and earlier under glass protection.

A partially shaded place sheltered from high winds suits this Lily best, as, like *L. Hansoni*, the flowers are apt to bleach in full sun. It grows well in loam, and

also in a mixture of loam and peat, and likes plenty of moisture in full growth. It will flower well the first season after planting, and continues to increase in size of bulb and height of stems yearly. The largest bulbs grown under glass culture at Kew have measured over eight inches in diameter.

L. Humboldti is a native of Central and Northern California, mostly in elevated districts, where it grows four to eight feet high, but in this country it seldom exceeds five feet. The flower stem is stout and erect, and clothed with whorls of leaves at regular intervals. The numerous drooping flowers are borne in a loose triangular cluster. They are brilliant reddish-yellow, spotted with maroon on the reflexed petals.

The variety *ocellatum* or *magnificum*, from Southern California, is superior to the type in freedom of flowering and the maroon spots are much larger. The variety *Bloomerianum*, known also as *L. Bloomerianum*, is a smaller growing form.

The bulbs of the typical *L. Humboldti* are large and heavy and peculiar in shape. Unfortunately this is as capricious as it is beautiful. It grows well with no special attention in some gardens, in others it invariably fails from some unaccountable reason. The most successful results as a rule are attained when the bulbs are under the same conditions as *L. auratum*, but even then they often fail, whereas under quite different conditions they will flourish.

A moist atmosphere seems to be indispensable to it, and therefore it thrives well in moist parts of Scotland and Ireland. Like many others of the Martagon group it rarely makes much show the first season, even from a large bulb; often the only sign of life above ground is a puny stem about a foot high that perishes before growing strong enough to flower. The following season, however, it usually recovers strength and

makes better growth. It flowers in July in the south, and a month later in the north.

L. Jankæ.—A comparatively new and rare Lily. It is a native of the mountains of Transylvania, and nearly related to the well-known *L. pyrenaicum*, often called the Yellow Turk's Cap Lily. From *L. pyrenaicum* it differs in being a taller plant with broader leaves, while the flowers are larger, and of a clear yellow dotted slightly inside with brown. It thrives in a good loamy soil.

L. japonicum.—For many years this beautiful Japanese species, better known as *L. Krameri*, was unique among Lilies on account of its colour, but now the newer *L. rubellum* shares the colour distinction. Unfortunately *L. japonicum* is one of the least amenable to cultivation of its class, consequently it is rarely seen in good condition. Its bulbs are seldom much larger than a walnut, and the slender stem in the first stages of growth bears resemblance to a weak shoot of *L. auratum*. It grows from two to four feet high; the flowers are large, as many as five on a strong plant, but usually single. They are funnel-shaped, six inches or more in length, and as much across. The colour is generally a clear pink, but there is a good deal of variation in the depth of tint, some being of a pale blush, almost white. It is best treated in the same way as *L. auratum*, but even then it is very erratic in its behaviour, and probably without annual importations it would be soon lost to our gardens.

At Wisley the late Mr Wilson used to grow it in one place in his garden among rhododendrons.

Alexandræ is a very beautiful but uncommon Lily, resembling in some respects *L. auratum*, and in others *L. longiflorum*, but at Kew it is ranked as a variety of *L. japonicum*. It reaches a height of two to three feet, the stem being clothed with rather pale green leaves, about six inches long and three-quarters of an inch in width. The flowers are much shorter in the tube than

LILIUM LONGIFLORUM

those of *L. longiflorum*, and are wax-like in texture, of a clear white hue, shaded at the base with green. The fragrance resembles that of *L. longiflorum*.

This Lily was first introduced from Japan under the name of *L. Uki-uri*. It is hardy only in particularly favoured localities, so that in a general way it is only satisfactory when treated as a greenhouse plant in pots, or started in growth in pots and then planted out in a border.

Colchesterense, a variety known also as *L. Brownii odorum*, is now classed at Kew as a variety of *L. japonicum*. It is described here with *L. Brownii*, which it most resembles. It was first introduced by Messrs Wallace of Colchester, the Lily specialists, who have stimulated Lily culture more than any other firm in this country.

L. Kelloggii.—A new Lily from North-Western California. It has a small bulb like *L. columbianum*. The stem is slender, with leaves in whorls, and terminated by several drooping, much reflexed flowers of a pinkish purple spotted with maroon. It needs the same treatment as *L. Humboldti*, but no one in this country has had much experience in growing it. In flower it reminds one of Washingtonianum and Martagon.

L. Leichtlini.—Though introduced from Japan as long ago as 1867, this Lily has always remained scarce, and even now it is grown in very few gardens. It is one of the most graceful Lilies; it grows from three to four feet, with slender stems and long narrow leaves. The drooping flowers are on long stalks and narrow reflexed petals of pale yellow, spotted with reddish chocolate. It succeeds best under conditions favourable to *L. auratum*, and flowers in July. The bulbs are small, and scarcely to be distinguished from those of *L. Batemanniæ*.

What is known as the red *L. Leichtlini* is the variety of *L. tigrinum* named *jucundum* or *Maximowiczii*, which

is a stronger constitution Lily, thriving where *Leichtlini* fails.

L. longiflorum.—There is not a more popular Lily than this at the present day, or one more largely grown, both in private and commercial gardens. It is worthy of its popularity, as its magnificent, trumpet-like flowers are of the purest white, and have a delicious perfume, and the plant is of the easiest cultivation. Flowering plants may be seen throughout the year in the flower markets, for by forcing naturally treated bulbs into early flower, and by the now prevalent system of retarding the bulbs for late flower, the flower season of this beautiful Lily is made to overlap. In flower-market nurseries it is a most important plant, and some of the largest growers flower it in tens of thousands.

It is a Lily one can enjoy in the open garden from June till August, and in the conservatory and dwelling-room before and after that season, while it is alike appropriate for a bridal bouquet or a funeral wreath. Bulbs of it for sale are now largely grown in this country. From Holland we receive numbers, but the bulk of importations are from Japan and South Africa.

From Bermuda comes chiefly the variety *eximium*, under the name of *Harrisi*, which is more largely grown under glass than any other. The more tropical climate of Bermuda favours the growth of this variety, which differs from the others by its taller and stouter growth and more numerous flowers on each stem. This luxuriant character of growth has doubtless been developed from the original species by its continual cultivation in a tropical climate, which alters the character in course of time of other plants from purely temperate countries.

A commonly grown Lily like *L. longiflorum* is so well known that there is no need to describe it in detail, but, as at the present day there are numerous varieties differ-

ing more or less from the original type, and vary also in their value as garden plants, the following notes on the named varieties enumerated in trade catalogues may be helpful. Some of the so-called named varieties are so nearly alike that it is hardly worth while attempting to describe the difference between them. The most distinct are those named.

eximium (*Harrisii*), called also the Bermuda Lily, described above as the variety largely grown under pot culture. It flowers early in the year when first imported, but grown in this country afterwards, it reverts to its normal season of flowering. It is taller, more robust, and luxuriant than the type, whether grown out of doors or under glass. Similar if not identical is the variety,

giganteum, a strong growing form, bearing more flowers on a stem than the type, and is therefore one of the best for pot culture and the open border. Another name for this is *multiflorum*.

foliis albo-marginatis has the leaves margined with creamy white variegation and is a strong grower, but the flowers are similar to those of the type.

formosanum, a native of the island of Formosa, is a more slender plant than the type, having long narrow leaves and attenuated trumpet flowers, white, tinged with purple on the outside.

Takesima is a distinct variety easily recognised by the stems, which, with the outer parts of the flower-buds, are tinged with a deep brownish tint. It is a strong grower, flowers freely, and rarely fails in the open border.

Wilsoni has very large flowers, and is of dwarfer growth than the common or typical variety.

L. longiflorum cannot strictly be termed a hardy Lily—that is, it cannot be treated generally as Tiger or Orange Lily. In the warmer parts of the country and where the soil is light it will withstand our winters if left in

the open border, but in the colder parts, and where the soil is inclined to be heavy and moist, the bulbs require to be lifted in the autumn, otherwise they would either perish or develop weak stems, on account of a number of the bulb scales decaying. Even in places where it remains throughout the year in the open borders it is advisable to cover the surface over the bulbs with leaves or some such protective material. In the open garden it likes a well-drained soil of peat loam and sand in equal proportions, and loves plenty of moisture while in active growth, therefore must be watered during dry weather. It is one of the few Lilies that will thrive equally well in the full sun or in partial or complete shade, but it is always best to plant it where it will be sheltered from high winds, and where there are shrubs for a background as a foil to its flowers. In the open air it flowers in July and August.

L. Lowii, also known as *L. Bakerianum*, was introduced in 1893, but still remains a rare Lily. It is of rather slender growth with narrow leaves, while the flowers are quite distinct from those of any other, being bell-shaped, and plentifully spotted with purple, though in this latter respect there is a wide range of variation; some forms being sparsely spotted, others heavily blotched.

This Lily grows about a yard in height and it is hardy only in very favoured spots, so that it is always advisable to grow it in pots, in a cool greenhouse or frame, even if the climate is suitable for planting it in the open during the summer. It is a native of Burmah.

L. maritimum.—A native of peaty meadows on the Californian coast, near San Francisco, and like some of the others from the same region, is difficult to permanently establish in this country. It is a slender growing plant about a yard high. The flowers produced in July are drooping and bell-shaped, with the petals much reflexed, and of a bright crimson, spotted

LILIUM GIGANTEUM

inside with purple. It grows best in a moist, but not sodden, peaty soil, in a partially shaded place, such as occurs in a well-planned rock garden.

L. Martagon (Turk's Cap Lily) is the type of the great Martagon group of Lilies. It is the only Lily that has been regarded by some botanists as a native in England, but it occurs wild more or less plentifully throughout Central and Southern Europe, and extends into Asia. As a garden plant it has been grown in England for over three centuries, but the recent varieties of it being more attractive in flower have, to a great extent, supplanted it. It is owing more to its graceful growth than to the flower colour that this Lily is a favourite garden plant. It grows from two to five feet high, with whorl of leaves at regular intervals on the stems. The flowers are numerous, borne in terminal pyramid-shaped clusters, small, symmetrical in shape, with reflexed petals of dull purplish pink, marked with spots. Their odour is somewhat unpleasant. The varieties of this Lily are among the finest of Lilies, and all worthy of culture.

They comprise: *Album*, with pure white flowers and yellow-tipped stamens. The growth is the same as that of the type, and is one of the rarer of cultivated Lilies. There are two forms of it; one has the flowers pure white; the other with a lilac tint, and this is stronger in growth than the other, and with leaves more shining.

dalmaticum is a strong grower, and a stately Lily, when seen at its finest growth. The stems rise as tall as six feet, and the flower clusters are correspondingly large. The flowers are a deep vinous purple of waxy texture, and shine as if varnished. Well grown plants bear from thirty to forty flowers in a head.

Cattaneæ is regarded as a form of *dalmaticum* with darker flowers, almost black, and like *dalmaticum* has the unopened flower buds enveloped in a whitish cover-

ing. There is a double-flowered variety of the common *L. Martagon* named *flore plenum*, but is very rare and not particularly beautiful, though interesting as being one of the few Lilies with double flowers.

L. medeoloides.—A Japanese Lily much resembling the Oat-scale Lily, *L. avenaceum*, and with which it is often confused; but it is rather a taller grower and the reflexed flowers are of a brighter orange-red tint. Like *L. avenaceum*, it is difficult to grow and is therefore very rare in this country.

L. monadelphum (the Caucasian Lily) is an old introduction, and one about which there has been, and is still, some confusion in regard to its correct name; and this has arisen no doubt because of its variation in flower, colour, and other characters. It is still known in gardens under the names of *L. colchicum*, *L. Loddigesianum*, *L. Ledebouri*, and *L. Szovitzianum*. But taking a broad view of mere colour variation of flower, there appear to be but two distinct forms of this Lily. These are the type which, according to the Kew nomenclature, is *L. monadelphum*, and the other distinct form is the variety *Szovitzianum*. The difference between these is well marked in the colour alone, the type having flowers of rich yellow colour, more or less copiously spotted, and the stamens tipped with straw-coloured anthers. In the *Szovitzianum* variety the flowers are larger, the colour paler, and the anthers red, and the segments less reflexed.

Technically the difference between the two is discerned by the stamens of *monadelphum* being joined at the base, while in *Szovitzianum* they are free to the bases.

It is one of the early flowering Lilies, being usually at its best at the end of May in early seasons, or during the first part of June in later springs. It reaches a height of four to six feet, or taller; the stems are stout, and the numerous leaves are pale green, and the flowers are often numerous, forming regular pyramidal-shaped

clusters. As many as thirty flowers are sometimes borne on one stem of old-established bulbs. The flowers are four inches across, drooping, and with the segments of a thick wax-like texture, and regularly recurved. They vary from a pale citron yellow to deep yellow, and while some forms are copiously spotted, others are spotless. It is a native of the Caucasian region, and thrives in a good loam soil, well-drained, and in an open spot. The first season after planting it seldom shows much growth above ground, after which, if position and soil are suitable, it improves year by year.

L. neilgherrense.—The Lily of the Neilgherry Hills in India is not a Lily for the open gardens in this country, but needs the protection of a greenhouse or frame. Bulbs are imported, and they flower readily the first year, but rarely maintain their strength to flower the second season, so that continual importation is necessary. There is evidently something in the mountain climate that cannot be imitated in this country; however, it is a grand Lily, as it reaches a height of three to four feet and bears from one to three large trumpet-shaped flowers with segments of very thick substance, and of a primrose yellow tint. The delicate aromatic fragrance of this Lily is distinct from that of any other. A mixture of loam, peat, and sand is suitable for imported bulbs. It does not start into growth till late in the season, and flowers at any time from September to November.

L. nepalense (the Nepaul Lily), like the preceding, needs the protection of a greenhouse in this country, where its blossoms are borne in early autumn. It grows from four to six feet and bears from one to seven flowers. These are funnel-shaped, about five inches across with the segments recurved. They are greenish yellow, with the basal portions of the petals deep purple. It may be grown in pots like *L. neilgherrense*, but both

thrive better if planted out in a greenhouse in a moist bed of peaty soil in a light position, but not where the plants would be scorched in summer.

L. pardalinum (Panther Lily).—Of the Californian Lilies this is the finest and most valuable as a garden plant, being very hardy, a robust grower, and particularly stately and graceful in growth. Where it develops perfectly it has stems as tall as nine feet, and these often bear as many as twenty and thirty flowers on a stem. The tall stems have whorls of deep green leaves at intervals, and in a breeze they wave about in a graceful way.

The flowers begin to expand from the base of the clusters upwards, so that there is a succession of expanded and opening flowers for two or three weeks. The flowers are large, but the petals being strongly recurved, they do not appear as large as they really are. The colour varies in the several varieties. In what is regarded as the typical form the petals have the lower parts bright orange and spotted with red, and the rest bright red or scarlet.

There are several named varieties, differing more or less from each other and from the type, and the following comprise those in cultivation :—

angustifolium, a well-marked variety of slender growth with leaves very narrow compared with other varieties. The flowers are similar to those of the type, a rich orange red heavily spotted with brown.

Bourgæi, a robust growing form with flowers more deeply coloured than the type.

californicum has the scarlet of the petals extending half-way down the petals.

luteum has orange-yellow flowers spotted crimson but without the scarlet tips to the petals.

Michauxii or *Ellacombei*, a smaller grower than the type, and commences to flower about a fortnight later.

pallidifolium or *puberulum* has paler green leaves and lighter coloured and rather smaller flowers than the type.

Roezli differs by having the leaves being more scattered on the stem, and but rarely borne in whorls. The flowers are bright yellow dotted in the centre with purplish brown. They are borne in a pyramidal-shaped cluster. It grows about five feet high.

Robinsoni is the strongest grower of all the varieties, and very deep in colour.

Warei has apricot yellow petals with spots or markings, and is very distinct and beautiful, but, like *luteum*, it is not common.

The Panther Lily is essentially an open-border Lily as it does not thrive to perfection in pots, the reason being that the bulbs are stoloniferous or creeping, and form large spreading masses at the period when the bulbs are the strongest.

Its place in the garden is a moist bed, such as suits rhododendrons and other peat-soil shrubs, and if planted along these the tender shoots of the Lilies are protected from the cold winds in the early stages of growth. But it resents being too crowded by the shrubs as the growths must have ample light and air about them. It is not particular as to position, whether in full sun or partially shaded, but it is always best to plant it where it will not when in tall growth be injured by high winds. It always appears more beautiful when flowering against a background of shrubs.

It does not like to be disturbed when once well established, but it is easily transplanted if care is taken not to break the masses of bulbs.

It will generally flower the second season after planting bulbs of flowering size, but it gathers strength year after year, and need never be disturbed, as it rarely deteriorates in places and soils suited to it.

It begins to flower about the middle of July, and the varieties follow in succession so that for weeks it is a joy to the gardener.

L. Parryi.—Parry's Lily is a distinct and very beautiful Californian species. It is not a very strong-growing Lily and needs attention. It grows from three to five feet, and the slender stems bear several funnel-shaped flowers of a soft yellow, dotted at the inner bases with crimson, and have a delicate fragrance.

The bulbs are somewhat creeping but not to the same extent as those of *L. pardalinum.* It flowers towards the end of June or in July. A partially shaded place sheltered from winds and a moist, well-drained peaty soil suits it well.

L. parvum.—A Californian Lily, requiring the same treatment as Parry's Lily, and it flowers about the same time. It grows from four to five feet high and bears several drooping recurved flowers of a clear yellow or orange tint tipped with red. It is a choice Lily that should be grown in a part where it can have the same watchful care as other Lilies of the more delicate class.

L. philadelphicum. — Is a gem among the upright flowered section, and a Lily grower who succeeds in flowering it will regard it as a triumph of his cultural skill. It has a small fragile bulb, which, when strong enough, develops a very slender stem about eighteen inches. The cup-shaped flowers are in the centre, yellow dotted with maroon, and the tips of the petals are scarlet. A distinguishing point in this Lily is that the segments of the flower are very narrow—as if stalked. It flowers in July. Like *L. Catesbæi,* to which it is nearly related, it is a difficult Lily to permanently establish, and no one can definitely say what its exact requirements are, as so few grow it and still fewer are successful with it.

LILIUM CANDIDUM

L. primulinum.—A rare Lily, the flowers of which are intermediate between *L. nepalense* and *L. neilgherrense*, and they are trumpet-shaped, large, and of a clear unspotted primrose yellow. It is a native of Upper Burmah, and in common with all Lilies from that region needs greenhouse treatment. It was first introduced under the name of *L. claptonense*, but this name has been suppressed.

L. philippinense.—This is regarded as an extreme form of *L. longiflorum* altered in its character by a tropical habitat. It is a native of the Philippine Islands, and is therefore one of the most tender of all Lilies, needing for its culture a warm greenhouse. It differs from the common form of *L. longiflorum* in being taller and more slender in growth, with very narrow leaves and more drooping flowers, which are usually borne singly. Even in a warm house this Lily can rarely be kept in robust health for any length of time.

L. polyphyllum.—A Lily from the Himalayas, which is now more rare than it was a few years ago. The bulbs are very much elongated, the stems about a couple of feet high. The flowers are turban-shaped, of colour greenish yellow marked inside with a strong tinge of purple. It is best to treat it as a pot Lily in a greenhouse or frame, using for soil a mixture of loam, peat, and sand. The late Mr Wilson used to grow this Lily in the open air at Wisley, though he always maintained that its proper place was under glass protection, and even under the most attentive culture it is a difficult Lily to keep after the imported bulbs have flowered. Seedlings raised from home-grown seed may prove stronger and more amenable to culture in our climate.

L. pomponium, known also as *L. pomponium verum*, is a very old garden Lily, growing about three to four feet high. At the end of May or early in June it bears deep, rich, scarlet, Turk's-Cap-like flowers. It is a beautiful

Lily for the open border, but it is too strongly scented for rooms. The flowers are a good deal like those of *L. chalcedonicum*, which does not flower for some time after *L. pomponium*. Both these Lilies grow strongly in good garden soil of a loamy nature and are very hardy.

L. pyrenaicum.—The Pyrenean, or Yellow Turk's Cap, Lily, is less showy than many others; it is the first of all to flower in the open air, and is desirable on that account. Its stems grow about two feet high and are clothed densely with narrow leaves. Its flowers and strong stems are many, but are small and regularly reflexed and are yellow, dotted brown. It has a particularly heavy and unpleasant odour, hence it is only suitable for the open border. It grows well in the full open in a good loamy soil.

L. rubellum is an extremely beautiful small Lily, and one of the most recently introduced. It was received from Japan and first flowered in 1898, but now is tolerably common, as it has been very largely imported. At first it was confused with *L. japonicum* (*Krameri*), as it has the similar pink flowers though smaller, but it may be at once distinguished by its shorter stems, broader leaves, smaller and less open flowers.

The colour varies from a deep rose pink to almost white, and this variation of colour in some cases depends upon the health and vigour of the plants. It is one of the earliest to flower at the end of May or beginning of June, and earlier if grown in pots under glass, and its flower-buds show at the tips of the stems weeks before they expand.

Though it cannot be termed a robust and hardy Lily, it appears to be less fastidious in its requirements than *L. japonicum*. In the milder parts and in light soils it continues to thrive and gain vigour, but in cold and damp parts, and especially if the surrounding soil is heavy, it is liable to disappear, the bulb perishing, no doubt,

during the dormant stage in winter. Some growers surround the bulb in rubble so that it is never in direct contact with the soil, and this is a hint worth noting.

L. speciosum.—This very beautiful Lily is deservedly a favourite both for the open air garden and pot culture under glass. Fortunately, it is one of the most satisfactory and reliable to grow, for being of a strong constitution it continues year after year without anxiety to the grower, excepting in the cold and wet parts of the country, where it requires either annual lifting or protection by mulching. In the south it is quite hardy in the open, and in some old gardens established plants spread to a large size without even any addition to the soil. It is an old garden plant, having been sent from Japan in 1830, and is still known, especially among flower-markets growers, under its old name *L. lancifolium.* In the open it flowers towards the end of summer and early autumn according to the district. Established bulbs flower a fortnight earlier than newly planted bulbs, which are generally better the second year than the first after planting.

When this Lily was first introduced its culture was taken in hand by the Dutch, and till within the last thirty years or so our supplies of bulbs were derived from Holland; but now large numbers are sent direct to us from Japan, the varieties from there being distinct from the Dutch forms.

There are numerous varieties, some more distinct than others.

White Varieties.—Those that have received distinctive names are *albiflorum* or *album* (from Holland); bulbs deep brown colour; stems, leaf stalks, and unopened buds tinged with chocolate; flowers, white but slightly suffused with pink. *Krætzeri*, from Japan, often imported under the name of *album*, differs widely from the Dutch *album*, the bulbs being yellowish, the leaves pointed and

bright green in tint, and the unopened buds are also tinged with green. The petals are long and reflex in a very regular way, and pure white, except a greenish stripe which extends about halfway down the centre of each petal. The anthers are brown, and by this character it may be distinguished from another Japanese form, *album novum*, in which the anthers are also somewhat larger than those of *Krætzeri*.

Coloured Varieties.—The names *roseum* and *rubrum* have long been used to indicate varieties of this Lily, but there is really little if any difference between them as grown by the Dutch, though the *rubrum* of the Japanese is a superior flower, being larger, and deeper in colour. The finest, however, of all the rich tinted forms of *L. speciosum* is that known as *Melpomene*, which is imported from Japan. In this the flowers are of a deep carmine crimson, intensified by a narrow margin of white on each flower. The bulbs of this are as a rule more irregular in shape than those of any other variety of *L. speciosum*. The variety *punctatum* has blush pink flowers with deeper coloured dots, but though pretty when in good condition its constitution is too weak for general culture. The variety *gloriosoides* was introduced some years ago, but appears to have become extinct in this country. It is a beautiful variety, with flowers copiously spotted with pink on the white petals.

When planted in the open ground, deep sandy loam, with an admixture of leaf mould and peat, is best suited to the requirements of *L. speciosum*, and the bulbs should be planted among shrub growth where the young shoots will be protected from the cold cutting winds of early spring. The conditions detailed for *L. auratum* will also suit *L. speciosum* and its varieties. Though a beautiful border Lily in the southern parts of England, it often flowers too late in the northern districts to be seen at its best, hence it is frequently grown in pots, placed in

LILIES IN LORD ILCHESTER'S JAPANESE GARDEN AT HOLLAND HOUSE, KENSINGTON

the open air in summer and removed under cover when in flower bud. This Lily likes plenty of moisture, therefore during hot weather it should be copiously watered in the borders.

L. sulphureum is known as *L. ochroleucum* and *L. Wallichianum superbum*. It is a magnificent Lily from Northern Burmah, and, unlike most species from that region, appears to be very amenable to cultivation, for with ordinary care and attention it will grow and flower year after year. It is a noble Lily in flower, attaining under glass a height of six feet or more, and the trumpet-shaped flowers are the largest of the trumpet-flowered section. They are creamy white with a ruddy tinge on the outside, and the inside suffused with rich yellow.

The firm brown-coloured bulb much resembles that of *L. nepalense*, and as the two grow together they can only be selected when in flower. It begins to grow later than other Lilies and thus escapes frost when grown in the open. The stems are thickly clothed with narrow leaves which in a young state are tinged with reddish brown. This Lily is one of the few that bear bulbils in the axils of almost all the upper leaves, and this peculiarity enables one to distinguish it readily from others of the tube flowered section. It flowers as a rule in September or even later. Though generally grown under glass it is quite hardy in the extreme south and west of England, but owing to its late period of flowering it is even there more satisfactory when grown under glass. The best way is to grow it in the open in deep pots, and remove the plants under glass when coming into flower.

L. superbum (The Swamp Lily).—This is a native of the Eastern United States and a very variable species. It bears much resemblance to the Californian *L. pardalinum* and like that species the bulbs are of the peculiar rhizomatous or creeping growth, and the cultural require-

ments of both are identical, except that *L. superbum* will thrive in a moister soil than the other, though not in a swamp in this country as it appears to in its native habitat. Fine specimens of *L. superbum* reach a height of six to eight feet and bear from twenty to thirty elegantly reflexed flowers arranged in large cone-like clusters. The colour varies from pale yellow to deep crimson and all the forms are more or less spotted on the inner surfaces of the petals which are more pointed than those of *L. pardalinum*. The leaves are arranged in more or less regular whorls with wide intervals between.

It does not flower till August, and is the latest of the Martagon group, hence its value as a late Lily. It thrives perfectly in the full open planted among low growing shrubs or in partial shade in recesses of shrub growth.

L. tenuifolium.—A charming little early flowering Lily from Siberia, growing only about a foot or eighteen inches high. The narrow deep green leaves are numerous, and in contrast to the deep scarlet flowers which appear at the end of May or in June. The flowers are numerous, of waxy texture, and have the strongly recurved petals as other Turk's Cap Lilies. It is a somewhat delicate Lily, that is, it is best not to grow it with very robust or spreading plants, but in a place where it can be looked after, such as a niche in the rock garden. It likes a cool, moist, loamy soil and partial shade, and need not be lifted in autumn as it is quite hardy. It is suitable for pot culture as the small bulbs do not require large pots, but it must not be forced into flower by artificial heat.

The variety *stenophyllum* or *pumilum* differs by its narrower leaves, stouter and taller stems, but is a rare Lily in gardens.

L. testaceum, the Nankeen Lily, is also known as

L. isabellinum and *L. excelsum*. No Lily is more distinct in colour than this, as the clear nankeen tint is not seen in any other. It is generally supposed to be of hybrid origin, but like *L. Browni* its early history is obscure.

It resembles in many points the common *L. candidum* and *L. chalcedonicum*, and therefore botanists regard it as a natural hybrid between these two species. It has never been found as a wild plant, and if the hybrid has been produced culturally no record of its origin exists.

Established plants under favourable conditions grow from six to seven feet high, and the horizontally poised heads of drooping flowers wave in a breeze in a graceful way. The flowers have the petals nearly as much reflexed as in the Turk's Cap Lilies, and their colour is in contrast with the bright red anthers. The flowers have a strong yet agreeable perfume.

L. testaceum is, with the exception of *L. candidum*, the earliest Lily to start into growth in spring, but its foliage is seldom injured by frosts or cold winds. It thrives under similar conditions to *L. candidum* and *L. chalcedonicum*, and is not much disturbed in growth by transplanting. It is a good Lily for pot culture, and one plant will fill a room with its fragrance.

L. tigrinum.—The Tiger Lily though a native of Japan and China is now as familiar in gardens as the European Lilies, and is deservedly a popular favourite, being very hardy, robust and rarely fails under ordinary cultivation, and this adds so much to its value as a garden plant. It is so well known that a description of it is scarcely necessary. It grows to a height of six feet or more, but varies a good deal in this respect.

The flowers are large, with reflexed petals, and in colour a light orange red, more or less heavily spotted with deep purple.

This applies to what is known as the common form of

Tiger Lily, but there are several varieties which differ more or less from the type and each other.

Of the varieties, the best are *splendens* (called also *Leopoldii*), in which the lower part of the stem is smooth and almost black, and the leaves fewer in number, but broader and a deeper green than those of the type. The flowers are larger and much brighter in colour, while the spots though less in number are larger. This variety is superior to any of the others for growing in pots. The double form (*flore plenum*) is the best example of a double flowered Lily that we have, but lacks the beauty of the single flowered forms.

Fortunei, of which huge bulbs are sent here annually from Japan, develops very tall and stout stems, and sometimes bears as many as fifty flowers on a stem. It is distinct from other forms in having the stems clothed with woolly down, while the flowers are somewhat paler in colour than those of the type.

All of the above bear bulbils freely in the axils of the leaves, but in one variety *jucundum*, known also as *L. Maximowiczii* and *L. pseudo-tigrinum*, they are not produced. This variety is more slender in all its parts than the others. The colour is a pale vermilion, spotted with maroon. It is quite a distinct Lily in appearance from the ordinary Tiger Lily, and some have regarded it as a distinct species, but those who take a broader view of what constitutes a species, rank it only as a variety of *L. tigrinum*.

The flowering season of the Tiger Lilies extends over a considerable part of the summer, as it may be grown in pots, and induced to flower early in May or earlier, while the open air flowering of the type commences in July, followed by the double, *splendens*, *jucundum*, and *Fortunei*, which prolong the flowering season till September.

The Tiger Lilies are best when grown in the full open in a friable soil either of sandy loam and peat or

peaty soil, but the position must not be where the soil is liable to become parched during a dry time. It is best to plant where the Lilies will be sheltered from high winds.

L. Wallichianum.—This rare trumpet Lily from the Himalayas has slender stems and bright green narrow leaves. It usually bears a single flower eight or nine inches long, of an attenuated funnel-shape, with a widely expanded mouth. It is white, with a greenish tinge on the exterior. It is very sweetly scented. It needs greenhouse culture under similar treatment as the Nepaul Lily.

L. Washingtonianum.—The Washington Lily is a beautiful Californian species growing wild in the wooded region of the Sierra Nevada, whence it was introduced to Europe nearly forty years ago. The bulbs are large and of peculiar form, being very oblique, with whitish narrow scales. The stems grow from three to five feet high, and have whorls of thick glaucous pale-green leaves at intervals. The raceme of flowers terminates the stems, and varies in length from six to twelve inches, and carries from twelve to twenty or more flowers.

These are large, being six or more inches across when the petals are spread out. They are erect, or nearly so, funnel-shaped, with reflexing petals, and fragrant. The colour is reddish purple, spotted with a deeper tint, and becomes paler with age.

The variety *purpureum*, introduced from the Siskiyou Mountains, in the Cascade Range, is of smaller growth, with the flowers of a deeper tint of lilac pink. It differs also in growth, arrangement of the flowers on the spike, and other characters, so that some botanists are inclined to regard it as a distinct species, but in this country it is considered only as a variety.

The variety named *minor* is similar, and so far as is known, is not in cultivation in Europe.

The variety *rubescens*, by some regarded as a distinct species (*L. rubescens*), is by the Kew authorities ranked only as a variety of *L. Washingtonianum*, and this view is upheld by most Lily growers.

It has a smaller, more compact, and more oval bulb than the type. Its growth is more slender, the leaves narrowed. The flowers are smaller, with narrower tube, and the petals are recurved. When first opened the flowers are white, but change to a rosy pink.

The culture of the Washington Lily, and its forms, is, unfortunately, difficult in this country, where the climate is so different from that of its native country. Some succeed well with it by planting it deep in a well-drained soil of peat leaf mould and loamy grit. As it is a wood Lily it must have shade or partial shade, as it fails or grows weakly in full exposure. The variety *rubescens* seems to be cultivated more successfully in America, but here there is not much difference between it and the type in regard to its behaviour under culture. It is so beautiful that it is worthy of trouble and attention. It appears to thrive best in the moist parts of the country, as it loves perpetual dampness at the root, especially in active growth. It flowers in June, and continues for some time.

L. yunnanense, one of the most recently introduced species, from Yunnan in China, is in cultivation at Kew. It is a slender growing plant, with narrow leaves on stems, from one to two feet high. The flowers are from one to three, small, drooping, pink and unspotted. Baker regards it as an ally of *L. oxypetalum*, which is now classed as a species of *Fritillaria*. At Kew it grows in the open in peaty soil.

LILIUM TIGRINUM

CHAPTER IV

HYBRID LILIES

THE raising of Lilies from seed is a method of propagation that hitherto has not been practised to a great extent, but it is undoubtedly a phase of Lily culture that should be encouraged. Not only is it interesting to watch the gradual if slow development from the seedling to the flowering stage, but the raising of stock from home saved seed must inevitably result in the production of a healthier and more vigorous strain of Lilies more suitable for successful culture in the climate of these islands. It is now a well known fact that seedlings raised from other classes of cultivated plants are, as a rule, stronger, aud more adaptable to this climate than seed collected from plants growing in a wild state, and therefore one reasons that what is true in regard to one class of plants would be in that of another.

It is also a recognised fact among gardeners that cross-bred plants are, as a rule, more vigorous than their parents, and one need only instance the case of hybrid orchids to uphold this theory.

So far as results have already proved, the Lilies that have been produced by intercrossing species are in almost every instance more vigorous than the parent species, and therefore we may hope that in the future we shall have numerous hybrid Lilies that combine the vigour of hybrids with the beauty and grace of the parents. The intercrossing of Lilies, and raising the resulting progeny, is a very fascinating art, but up to the present

time it has not been much practised in this country, and consequently we have but very few hybrid Lilies.

In California, however, the well known hybridist Mr Burbank is actively at work in this direction, and has sent to this country a series of hybrids, a selection from the large number he has raised, and we may expect more from the same source, and let us hope that other hybridists there are engaged in the same work.

The raising of seedling Lilies is a tedious process, necessitating as it does much patience and attentive care. From the time the seed is sown until the bulbs reach a flowering size, varies probably from five to ten years, and during that period more or less attention must be given to the young stock, though this amount of trouble is well repaid by the results, as no one can predict what may be the actual result of intercrossing.

The late Mr Wilson often told the writer that the best way to raise seedling Lilies is to sow the seeds broadcast in a selected spot for a seed bed, and then pay no heed to the beds beyond clearing the rank weeds away occasionally until the foliage of the seedlings can be discerned among the weedy growth. He used to follow this practice at Wisley, and pointed to beds of magnificent seedling Lilies such as *L. monadelphum* and *dalmaticum* in full flower, with stems six to seven feet high, which had never been disturbed since the day the seed was sown six or seven years previous.

Although it is only in recent years that hybrid Lilies have been raised artificially, nature has always been at work in this direction, and probably we have among our so-called species of Lilium several natural hybrids, but our knowledge of the limitations of species do not enable us to definitely assert which are hybrids and which are pure species. So far as we can assume with our present knowledge there is but one known natural hybrid, which is the beautiful Nankeen Lily *L. testaceum*, whose origin

is obscured, not having been found in a wild state, and therefore it is assumed that it is a natural cross between two European Lilies, the White Lily *L. candidum* and the Scarlet Turk's-Cap Lily *L. chalcedonicum*. This is probably correct, as the characters of the two species are blended in the alleged hybrid in a remarkable way, the growth, flower shape, and colour being intermediate between the two.

Other Lilies, which are now regarded as species or varieties, may possibly be either natural hybrids or, in the case of Japanese and Chinese Lilies, had their origin at some remote period in the gardens of those countries before they were opened to the people of the western world. If a Lily or other plant is not found growing more or less plentifully in a wild state, the presumption is that it is a chance hybrid or a seedling variation. The Lilies that are of obscure origin include besides *L. testaceum*, the Japanese *tigrinum jucundum* (*Maximowiczii*), *Wallacei*, *Batemanniæ*, and probably others.

The raising of hybrids by those who attempt this interesting work should be undertaken with method, as haphazard experiments, though the results may be successful, are often disappointing. Besides, the scientific value of systematic experiments is greater than chance work in this way.

The hybrid Lilies raised artificially number only about half-a-dozen, and their origin is recorded more or less satisfactorily. The following are those that have been named :—

L. Berensi.—A rare plant recorded as a cross between *L. testaceum* and *chalcedonicum*. The flower is as large as that of *testaceum*, but of a brighter tone of colour, due no doubt to the influence of *chalcedonicum*. It is also sweet scented. This is a case of a second cross, as *testaceum* is regarded as a natural hybrid.

L. Burbanki.—A hybrid raised in America by Mr Burbank, and said to be the result of intercrossing *L. pardalinum* and *L. Washingtonianum*; but the plants sent to this country bear few, if any, traces of the characters of the Washington Lily.

There are several forms of *Burbanki*, and judging from the Kew collection some of these appear to be hybrids of *pardalinum* and another Lily, either *L. superbum* or *L. Parryi*, while others appear to be simply selected forms of the pure *pardalinum*.

Nevertheless, whatever its origin may be, it is a splendid Lily as grown at Kew, having all the robust growth of *pardalinum* and very floriferous. In some forms the flowers resemble those of *pardalinum* and *superbum*, and others *pardalinum* in colour and *Parryi* in shape. It is a worthy addition to cultivated Lilies, and flowers about a fortnight earlier than *L. paralinum* and *L. superbum*.

L. Dalhansoni.—A free-growing and floriferous hybrid, the result of intercrossing *L. Martagon dalmaticum* and *L. Hansoni*. The characters of the parents are blended in the hybrid in a very marked way in growth, flower and colour, which is yellow clouded and spotted with reddish brown. It is becoming less rare than formerly, and is a Lily that will no doubt be grown largely, as it is not capricious. It will be noticed that the name is a combination of parts of the names of the parents, a common practice now in naming hybrids.

L. Kewense (raised at Kew) is one of the most interesting hybrids. It is the result of intercrossing too such dissimilar species as *L. Henryi* and *L. Browni* var. *Chloraster*, which is evidence that two species of different sections of the genus will intercross. The hybrid has flowers resembling those of *L. auratum*, but slightly smaller, the flowers being open and without the characteristic tube of *L. Browni*.

MADONNA LILIES

The colour is a rich creamy white, becoming whiter with age, and there is a trace of a band of a deeper creamy tint in the centre of each petal, obtained probably from the yellow *Henryi*. The foliage shows traces of that of *L. Henryi*, the pollen parent, and the growth is similar to that of *auratum*. It is quite a beautiful plant, but unfortunately it is rare, as it exists in but few places besides Kew.

L. Marhan is a similar hybrid to *L. Dalhansoni*, obtained by crossing *L. Martagon album* with *L. Hansoni*. It has the main characters of *Dalhansoni*, but flowers of a brighter colour, being a clear orange yellow with red brown spots and streaks. It grows from four to seven feet high, is vigorous, and, like *Dalhansoni*, is suitable for pot culture.

L. Parkmanni.—This magnificent Lily is said to be a hybrid raised in America between *L. auratum* and a deep coloured variety of *L. speciosum*, the latter being the seed parent. To describe it one has to imagine a flower of the finest variety of *auratum* in form and size, with each petal of a glowing crimson, broadly margined with white and with a yellow band down the centre of each, reminding one of the variety *rubro-vittatum*. The growth is that of *auratum macranthum* (platyphyllum). According to the raiser, Mr Parkman, he first planted out the seedling bulbs in 1869, which flowered a few years later. There were fifty bulbs, and among these, when they flowered, appeared this glorious plant. Of the other seedlings, only one resembled more or less the characters of the parents.

It was in course of time sent to this country and was grown and flowered and exhibited from the Knap Hill Nursery by Mr Waterer. Unfortunately the plants developed some disease and became thereby weakened and eventually disappeared, and it is now doubtful if it exists in cultivation; but it remained with us long

enough to stimulate the exertions of hybridists, and probably in due time we shall have the same hybrid repeated.

L. parvum hybridum is the newest hybrid known at the present date. It was exhibited in June 1904 by Mr Perry under this name, but no record of its parentage is known or at least divulged. It may be described as having the growth, foliage and stature of *L. parvum*, but with very drooping flowers with recurving petals. In colour the flowers are those of a rich variety of *pardalinum* in miniature.

The following species of Lilium are not included in the descriptive notes, as they are either not in cultivation in Europe or are extremely rare, and therefore do not come into the scope of this handbook, which does not assume to be a scientific treatise. The names of these Lilies are :—

Bakeri.	*formosum.*	*ochraceum.*
Bolanderi.	*Glehni.*	*oxypetalum.*
Davidi.	*lankongense.*	*papilliferum.*
Delavayi.	*myriophyllum.*	*Rostherni.*
Duchartrei.	*mirabile.*	*sutchunense.*
Fargesi.	*Masseyi.*	*taliense.*

CHAPTER V

LILIES IN THE OPEN AIR GARDEN

Of the seventy or more species of Lilies known, there are at least fifty that may be grown in the open garden in these islands, where the requisite conditions for successful culture can be obtained. Of this number of open air Lilies there are about thirty with their numerous varieties that can be grown well under conditions of soil and position that occur naturally in almost every garden, or if they do not exist naturally can be imitated without a great amount of trouble and expense.

For cultural purposes it is best to divide the genus into groups that require different conditions of treatment in the matter of soil and situation, but these groups do not run parallel with the botanical groups, as may be seen below.

First, there is a group requiring full exposure, and a soil moderately rich and stiff in texture, such as sandy loam and leaf mould. The species that thrive under these conditions are such as :—

bulbiferum.	*elegans.*	*pyrenaicum.*
candidum.	*Heldreichii.*	*tenuifolium.*
carniolicum.	*Jankæ.*	*testaceum.*
chalcedonicum.	*monadelphum.*	*tigrinum.*
croceum.	*pomponium.*	
dauricum.	*pulchellum.*	

The second group comprises those species that in the matter of soil require an addition of peat to the loam

and leaf mould, and as regards exposure will succeed in a shadeless situation though they seem to thrive best in a spot which is partially shaded, that is, full sun only during morning or afternoon, and shelter from winds.

This includes such species, with their varieties, as :—

auratum.
avenaceum.
Brownii.
callosum.
columbianum.
concolor.
Hansoni.
Henryi.
Humboldti.
japonicum and varieties.
longiflorum and varieties.
Leitchlini.
Martagon and varieties.
medeoloides.
parvum.
philadelphicum.
rubellum.
speciosum and varieties.
Washingtonianum and varieties.

The third group comprises those that revel in a deep sandy peat soil, that is, naturally moist but not sodden—a soil that in the driest days of summer seems moist and cool on the surface, and where the situation is partially shaded, such as the shadow cast over the spot during the hottest part of the day by large trees some distance away. Among the species and their varieties that thrive under these conditions are :—

Burbanki.
canadense.
Catesbæi.
cordifolium.
Grayi
pardalinum.
maritimum.
superbum.
Parryi.
giganteum.

Such are the conditions, approximately, under which the species named flourish best in gardens in various parts of the country ; but from close observations made during the past twenty-five years of the behaviour of Lilies under culture, the writer is convinced that there can be no hard-and-fast rules laid down, as one frequently finds species thriving under peculiar conditions quite opposite to those stated.

For instance, the capricious *Humboldti* thrives perfectly in a sun-exposed hardy flower border in parts of Scotland where the climate is moist with frequent cloudy skies. In the south it should be planted in semi-shade.

Again, with Lilies that thrive well in full exposure, such as *monadelphum*, *croceum*, *candidum*, *dauricum*, they are sometimes seen luxuriating and flowering year after year under the shade of old orchard trees, so that the precise conditions cannot be laid down as the invariable rule to follow. In places where frequent waterings can be applied to Lilies success is more often attainable, than where water and labour are scarce, as Lilies revel in waterings during active growth and in dry weather. It is therefore the wisest plan to place Lilies under conditions in which they are likely to thrive with the minimum of care and attention.

Such conditions as have been mentioned can be found in most gardens, and particularly in those of large extent where the exact spots suitable for each kind of Lily can be chosen and the soil made suitable for each group. The gardens in localities where the soil is light are most favourable for growing all the hardy Lilies with the least amount of preparation, and the heavy clay and chalk districts are the most difficult to deal with for Lilies, as in these districts peaty soil is rarely found in the neighbourhood.

The finest Lilies grown in this country are those in the Heath and Pine districts, such as are found in Surrey and Hampshire, particularly on the southern slopes of the New Forest. In these localities one can often find in the limited area of a small garden high open spots where the soil is not stiff, and low places where moisture collects and where all the tribe of American Martagon Lilies grows to perfection without much trouble in the preparation of the soil. Here, in some gardens, *speciosum* planted among *Kalmias* and *Azaleas* and other

shrubs on a southern slope grows as much as four and five feet high and *auratum* much taller, not only the results of one year but a succession of years. The soil is peaty and sandy in these parts, and there is often sufficient under-moisture to keep the Lilies in full vigour.

In growing lilies in the open like this, an undergrowth of shrubs is essential in order to give protection to the tender shoots in spring and early summer, when icy-cold winds sometimes ruin them for the season, as well as for keeping the soil about the Lilies moist and cool.

It therefore seems the wisest plan is to choose the right kind of shrub as an undergrowth which will thrive in the same soil as the particular Lily it shelters, and yet not grow so dense or tall as to overpower it. The common practice is to plant peat-loving Lilies among Rhododendrons. This is generally satisfactory up to the time when the Rhododendrons close in upon the Lilies and smother them, for though the Lilies like shelter they resent heavy shade.

It is unwise to plant Lilies among Rhododendrons on this account, because at the outset the Rhododendrons must be planted tolerably thick to give effectual shelter, but with Lilies that are likely to remain undisturbed for some years the Rhododendrons overpower them, and one has to lift both Rhododendrons and Lilies to replant at wider intervals. Dwarfer and slower-growing shrubs such as *Azaleas*, *Andromedas*, *Kalmias*, *Vacciniums*, *Pernettyas*, and *Heaths*, all of which give protection to the young shoots in their early stage, make beautiful masses out of which the Lilies can rise freely.

It is an easy matter to find suitable peat-loving shrubs to associate with peat Lilies, but it is not such a simple matter to select suitable shrubs for the loam-loving or stiffer-soil Lilies, as the tendency is for these shrubs to grow tall and quickly overpower the Lilies. But by selecting those shrubs that naturally keep dwarf, and

LILIUM AURATUM

also produce a beautiful mass of flowers either at the same time as the Lilies or before them, one can depend upon delightful effects, whether as isolated masses in an informally planted garden, large or small, or in large beds one sees in the extensive terrace-gardens about mansions. In selecting suitable shrubs as undergrowth, the chief point to consider beyond those just mentioned is the harmony of colour between the flowering shrub and the Lily if they flower at the same time, and specially to avoid the clashing of colours of the shrub with the Lilies.

In selecting shrub as an undergrowth for Lilies, there are a few points in regard to the selection to be considered. The chief is that the shrub should serve its purpose, that it should be of growth sufficient to shelter the Lilies in spring and at the same time be not too vigorous growth or too dense to unduly shade them during the summer growth of the Lilies.

Moreover, the aim should be to so combine the shrubs and the Lilies that during the time the Lilies are not in flower the shrubs should give an effective mass of flower or leaf colour.

The following are suitable combinations of shrubs and Lilies, and it will be seen from these examples that the shrubs are dwarf and flower at a time when the Lilies are not in bloom or are effective in foliage. Herbaceous plants do not so well suit the purpose of protection, because at the period in spring and early summer when the Lilies require most protection the herbaceous plants are but just appearing above ground, and therefore afford no protection from winds.

An important consideration also is that the shrub should thrive in the same soil, and from the selection of suitable shrubs given below a choice may be made.

The shrubs suitable for planting with Lilies named in the first group when the soil is moderately stiff loam,

lightened by sand and leaf mould, may be selected from the following :—

EVERGREEN

Olearia Haasti.
Osmanthus ilicifolius.
Escallonia macrantha (in mild districts).
Escallonia philippiana.
Diplopappus chrysophyllus.
Lavender.
Rosemary.

DECIDUOUS

Ceanothus Gloire de Versailles (Blue, August).
Ceanothus Marie Simon (Pink, August).
Pyrus nigra (White, early spring, leaves tinted in autumn).
Spiræa arguta (White, late spring).
Spiræa Bumalda (August to September, carmine).
Magnolia stellata (White, early spring).
Philadelphus Lemoinei (White, midsummer).
Deutzia gracilis (White, midsummer).
Hydrangea paniculata (White, August).
Cornus Spathi, golden variegated leaves.

Shrubs suitable for the second group which require a peaty soil added to the loam and sand, may be selected from the following :—

EVERGREEN

Pernettyas.
Andromeda floribunda japonica.
Zenobia speciosa pulverulenta.
Rhododendron ferrugineum myrtifolium.
Kalmia glauca.
Choisya ternata.
Erica (Heaths) all the species and varieties.

DECIDUOUS

Azalea mollis (*Rhododendron sinense*).	*Azalea pontica* varieties, and Ghent varieties. *Clethra alnifolia.* *canescens.*

The third group of Lilies requiring a moist peaty soil are for the most part all tall growing kinds, and, therefore, larger growing shrubs are suitable, such as

Kalmia latifolia and Rhododendrons.

For the smaller Lilies in the group shrubs, such as

Vaccinium pennsylvanicum stamineum. *Ledum latifolium palustre.*	*Andromeda japonica formosa.* *Itea virginica.*

In planting the shrubs they should be so spaced that the Lilies will be sheltered and the ground shaded about their bulbs, but not so closely as to interfere with the Lily stems rising freely. The shrubs given in the list are, with the exception of Rhododendrons, and a few others, all of small growth naturally, and if their branches do encroach upon the Lilies, they can be pruned away without harm.

A tasteful gardener will be able to make his choice of a shrub to suit the Lily and his own individual liking towards particular shrubs, and would, doubtless, produce such charming combinations as Lavender and Davurian Lilies, *Ceanothus* and Orange Lilies, Cotton Lavender *Santolina* and dwarf varieties of *L. elegans*, Purple-leaved Osmanthus with White Martagon and *L. Henryi*, *Pyrus nigra* and *L. dauricum*, *Spiræa Bumalda* and *L. longiflorum*, Rosemary and White Lilies.

The combinations of shrubs and Lilies that one can have are numerous, and give opportunity for the display of taste and skill.

CHAPTER VI

LILIES IN ROCK GARDENS

LILIES in Rock Gardens are charming additions to other plants, as they relieve the dwarfness of the alpines, while not encroaching upon them, as coarser growing herbaceous plants do. The bolder kinds may be planted in open spaces, while little nooks can be utilised for groups of the smaller growing species. In this way such kinds as *L. concolor* and its varieties, and *L. tenuifolium*, with the numerous dwarf forms of *L. elegans*, are seen to more advantage on raised portions of rock gardens than when grown in an open border.

Again, in a properly formed rock garden, different aspects and conditions of moisture prevail, so that the requirements of each may, as far as possible, be followed, and a measure of success obtained, that might not (at least in the case of the more exacting kinds), be otherwise possible.

Dry sunny spots should, above all, be avoided, a partially shaded position and a fairly moist soil being the most favourable. As a stagnant condition of soil is fatal to many Lilies, the advantage of planting them where thorough drainage, combined with a uniform condition of moisture, can be assured, is obvious.

Even the North American kinds, with spreading masses of bulbs, which quickly perish in a dry position, may be successfully grown in the lowermost recesses, if they are on the ground level, or slightly below it, and peaty soil be provided for them.

LILIUM JAPONICUM COLCHESTERENSE

CHAPTER VII

PLANTING LILIES

The soils and situations most suitable for various Lilies are dealt with in another chapter, but here are a few remarks concerning the actual planting of the bulbs, and the depth at which they should be covered.

In planting the choicer Lilies particularly if the soil is of a rather retentive nature, a good plan is to surround the bulbs with sand. This is done by putting a handful of sand in the hole dug for the bulb, then press it, and give it at the same time a somewhat circular movement, which will partially bury the bulb. Another handful of sand put on the top will cover the bulb, and then the soil may be made level over it. The sand ensures drainage immediately around the bulb, so that this is an important detail. The sand also is a preservative against fungus attacks and rot in the bulb scales.

The depth at which Lily bulbs should be planted depends upon their size, and other considerations. Those kinds that produce stem roots in quantity grow naturally deeper in the soil than those in which few, if any, roots are produced from the base of the stem. Examples of these two classes are *L. auratum* and *L. Martagon*.

In the case of *L. auratum* masses of roots grow from the base of the stem independent of the bulb itself. These stem roots serve to nourish the developing flower. It is therefore evident that bulbs of this section should have soil to envelope the lower parts of the stems so as to encourage the growth of stem roots, as the roots

at the base of the bulb are not sufficient to nourish the plant at the critical period of growth. Therefore *L. auratum* and others of the class should be planted sufficiently deep in light soil to ensure production of stem roots, but in heavy soil it is best to plant them shallow, and mound soil round the bases of the stems.

The second group is illustrated by *L. Martagon*, which does not root freely from the stem base, therefore stem roots need not be provided for.

Most Lilies of this class are characterised by unusually large and deep roots at the base of the bulb, so that they derive nourishment at a greater depth.

Again, generally speaking (though there are exceptions), those that produce roots freely from the base of the stem can be depended upon to flower well the first season after planting, while the Lilies of the non-stem-rooting section make but little progress towards full development the first year, and need two or three seasons before they attain their mature flowering growth. Though there are no hard and fast lines in regard to this matter, the principal Lilies may be divided with fair accuracy as follows.

Those with numerous stem roots :—

Lilium auratum.
,, *Browni.*
,, *bulbiferum.*
,, *concolor.*
,, *croceum.*
,, *dauricum.*
,, *elegans.*
,, *Hansoni.*
,, *Henryi.*
Lilium japonicum.
,, *Leichtlini.*
,, *longiflorum.*
,, *neilgherrense.*
,, *nepalense.*
,, *rubellum.*
,, *sulphureum.*
,, *tigrinum.*

Those with few, if any, stem roots :—

Lilium canadense.
,, *candidum.*
Lilium carniolicum.
,, *chalcedonicum.*

Lilium columbianum.
,, *cordifolium.*
,, *giganteum.*
,, *Grayi.*
,, *Humboldti.*
,, *Martagon.*
,, *monadelphum.*
,, *pardalinum.*
,, *Parryi.*
,, *parvum.*

Lilium philadelphicum.
,, *pomponium.*
,, *pyrenaicum.*
,, *superbum.*
,, *tenuifolium.*
,, *testaceum.*
,, *Washingtonianum.*
,, ,, ,, var. *rubescens.*

In the case of the stem-rooting section the most vigorous kinds, such as *L. auratum* and *L. Henryi*, may be planted at such a depth that the top of the bulb is from six to eight inches below the surface of the soil. From five to six inches will suit such as *L. japonicum* var. *Alexandræ*, *L. Brownı*, *L. bulbiferum*, *L. croceum*, *L. dauricum*, *L. longiflorum* and *L. tigrinum*, except the very large Japanese bulbs of *L. tigrinum*, which should be planted as deep as *L. auratum*.

Those with naturally small bulbs, including *L. Batemanniæ*, *L. concolor*, *L. elegans*, *L. japonicum*, *L. Leichtlini*, and *L. rubellum*, should not be planted so deeply as the large growers; three or four inches of soil above the top of the bulb will be sufficient.

Of the kinds that do not develop stem roots, the most vigorous kinds, such as *L. candidum*, *L. chalcedonicum*, *L. testaceum*, *L. Humboldti*, *L. Martagon*, *L. pardalinum*, *L. pyrenaicum*, *L. superbum*, and *L. monadelphum* should have about four inches of soil over the top of the bulb, and the others an inch or so less.

L. cordifolium and *L. giganteum* should be planted at such a depth that the top of the bulb is just about level with the soil.

Sometimes one sees *L. candidum* long established in old gardens, with its bulbs growing quite on the surface

of the soil and in fine condition, and being a very hardy Lily, the bulbs are not affected by even severe frosts.

The details of planting as described are those generally practised by the Lily growers in this country, but a hint may be gathered from the Japanese method. The author when studying Lily culture in Japan a few years ago, made particular note of the practice of some of the growers there in cases where largely exported Lilies, such as *auratum*, *speciosum*, *longiflorum* and others were grown in fields of large area. Deep planting seemed to be followed in some cases, while in others the bulbs were planted just below the surface, and as the stems grew the soil was drawn up between the rows, so as to make a ridge in just the same way as potatoes are grown. In this ridge the stem roots grew freely and the vigour and health of the plants were remarkable. This seemed to be a very rational method, and one that might be tried here, especially in cold soils in wet districts, for if the bulbs are planted deep in a cold soil the conditions must necessarily be less favourable for growth than when planted just below the surface when the soil is a few degrees warmer. There is no doubt that such Lilies as *auratum* do suffer when planted deeply in cold soils, and if there is any incipient decay of the bulb scales the cold and wet conditions of soil tend to increase it. Surface planting and then adding soil round the stems is the usual method followed in the pot culture of Lilies, and some growers who make a speciality of pot culture of Lilies use pots made a third deeper than the ordinary size so as to allow of this addition of surface soil above the bulbs.

CHAPTER VIII

BEST TIME TO BUY LILIES

THE novice in Lily culture often makes the mistake in delaying the purchase of the bulbs till they have suffered from being kept out of the ground too long in dry warehouses. Even if they have been laid in the ground and kept moist the basal roots of the bulbs will have made so much growth late in the season that they are broken in lifting them for permanent planting.

All the Lilies grown for sale in this country and in Holland may be obtained by the middle of October or beginning of November, and most of them being thoroughly hardy, can be planted at once, except in the case of the Japanese species.

These include such as *L. Browni*, *L. chalcedonicum*, *L. croceum*, *L. dauricum*, *L. elegans*, *L. testaceum*, *L. Martagon*, *L. pomponium*, some varieties of *L. speciosum*, *L. monadelphum*, and *L. tigrinum*.

In nearly all soils these can, with the exception of *L. Browni* and *L. speciosum*, be planted out permanently before the middle of November.

The bulbs of the Lilies imported from Japan arrive in this country from October till spring. *L. longiflorum* reaches here during October and November, and in a late season even in December. *L. auratum*, *L. japonicum*, *L. rubellum* and *L. speciosum* bulbs reach here as a rule about Christmas, and for purposes of sale they are generally stored in warehouses or in similar places,

and, therefore, should if possible be purchased before January is past.

The same remarks apply to the different North American kinds.

The best Bermuda grown bulbs of *L. longiflorum Harrisi* can be obtained in July and August, and should be potted or planted out at once.

The common White Lily, *L. candidum*, is an exception to other Lilies in regard to its planting season. Being almost an evergreen, it must be planted during the short interval the bulbs are without leaves, and this is from the middle of July till the middle of August. The mistake often made in planting this Lily in autumn or spring usually results in failure.

HOW TO KEEP BULBS BEFORE PLANTING.

Even in the case of the hardy Lilies it may not be convenient to plant them as soon as received, and in cold heavy soils it is an advantage to delay the planting till the severest part of the winter is past. In order to keep the bulbs in as good a condition as possible the best way is to place them separately on a level bed out of doors and cover them with about six inches of cocoa-nut refuse, and a layer beneath them. This is one of the best of coverings for bulbs as it keeps moist, and protects the bulb from injury by frosts. When, however, it is kept dry under cover it is one of the worst coverings, as it absorbs the moisture from the bulbs to such an extent that they suffer more than if laid simply on dry shelves.

Where it is desired to keep Japanese Lilies in good condition for planting in early spring, the best way is to store them in some shed or similar place, the bulbs being laid in fine soil or sand, kept slightly moist. In this way they retain their natural plumpness without any tendency to start early into growth.

LILIUM SULPHUREUM

CHAPTER IX

PROPAGATION OF LILIES

Most Lilies increase more or less rapidly by natural offshoots of the parent bulbs, but in order to increase the bulbs in large quantities other methods have to be resorted to. They are largely propagated by seeds, detached scales and by small bulbils, which in some species are produced in the axils of the leaves.

First, as to increase by seeds :—

Some kinds are far more prolific in seed than others in this country, but the late flowering kinds such as *L. speciosum* do not readily ripen their seeds in the open air, and therefore are better grown in pots for seed saving.

Seeds of the very hardy and robust Lilies, such as *L. Martagon*, *L. monadelphum* and var., *L. Szovitzianum*, *L. dauricum* and *L. croceum*, will do well sown in the open ground, but seeds of the more delicate species had better be sown in pans and protected by a frame during their earlier stages of growth, and even a small quantity of seeds of the most robust kinds are best dealt with more successfully when treated in this way.

Lily seeds should generally be sown immediately after ripening. If the seed bed is out-of-doors, a sheltered spot with moderately sandy soil must be chosen.

After sowing, the seed should, in most cases, be covered with about half an inch of soil.

The soil must be kept moist, but not water-logged.

It is a good plan to place a layer of moss on the soil

until the seeds germinate; this keeps the soil in an equable state of moisture.

The seed pans or pots should be clean and well drained, and filled to within an inch of the rim with a mixture of equal parts of loam and peat and about a fourth part of silver sand.

On this the seed should be scattered evenly and covered with from one-third to half an inch of the same soil. An ordinary unheated garden frame is the best place for the seed pans.

Seeds of some kinds of Lilies sown in the summer germinate the following spring, seeds of others lie dormant much longer. In the case of young seedlings raised in pots or pans they may be planted out in a well-dug and sheltered border, free from weeds, the second year, and shaded by branches stuck in so as to shade slightly, but not exclude light.

The raising of Lilies from seed requires a good deal of patience, as the time the seedling bulbs attain flowering size varies from three to seven years or longer.

Propagation by bulb scales is largely carried out in the case of some Lilies.

There are not many Lilies that cannot be increased to a greater or lesser extent in this way. Some, such as *L. candidum*, *L. dauricum*, *L. testaceum*, *L. croceum*, *L. auratum*, *L. longiflorum* produce young bulbils freely not only from the bases of the scale, but often from the edges—that is, if placed under conditions favourable to their production.

To obtain scales from which to propagate, the bulbs at the lifting period should have such of the scales removed as can be taken away from the parent bulb without much injury to the bulbs.

The scales should be treated in the same way as seeds; the young plants will in most cases make their appearance in less time than the seedlings.

Increase by bulbils.—A few Lilies, notably *L. tigrinum* and some of its varieties, *L. bulbiferum*, *L. Henryi*, and *L. sulphureum* produce small bulbils in the axils of the leaves, which, placed under favourable conditions, grow freely. So prolific is *L. tigrinum* in this respect that where old plants have flowered in one spot there is often during the following summer a crop of narrow grass-like leaves, the produce of the bulbils that have dropped from the stems after flowering.

When these stem bulbils are required for propagation they will grow larger than otherwise before dropping if the upper part of the flower stems are cut previous to the full expansion of the flowers, as these retard the growth of the bulbils.

Bulbils should be treated in the same way as seeds, except that the bulbils should not be sown broadcast but carefully set in the soil with the bases downwards, and then covered with soil and a layer of moss.

As a rule bulbils reach a flowering size before seedlings or scale-raised plants. *L. sulphureum* bears the largest bulbils of any cultivated Lily, and affords a ready method of propagating this grand Lily.

CHAPTER X

TIME OF FLOWERING

BELOW is a tabulated list of the open-air Lilies and their seasons of flowering, which vary with the earliness or lateness of the season and locality, whether north or south of the country.

End of May and during June.	*Lilium avenaceum.*
	,, *bulbiferum.*
	,, *callosum.*
	,, *carniolicum.*
	,, *dauricum* and varieties.
	,, *elegans* and many varieties.
	,, *Jankæ.*
	,, *monadelphum.*
	,, ,, var. *Szovitzianum.*
	,, *pomponium.*
	,, *pyrenaicum.*
	,, *rubellum.*
	,, *tenuifolium.*
End of June until July	*Lilium Bolanderi.*
	,, *Brownii* and varieties.
	,, *Burbanki.*
	,, *canadense.*
	,, *candidum.*
	,, *Catesbœi.*
	,, *columbianum.*
	,, *concolor.*
	,, *cordifolium.*
	,, *croceum.*

THE LATE MR. G. F. WILSON AMONG HIS LILIES AT WISLEY

(Seedling beds, L. Szovitzianum, the third year after reaching flowering size. L. Martagon Dalmaticum, L. Testaceum and L. Auratum are also shown)

End of June until July (*contd.*)

- *Lilium Dalhansoni.*
- ,, *Grayi.*
- ,, *Hansoni.*
- ,, *Heldreichi.*
- ,, *Humboldti* and varieties.
- ,, *japonicum* (*Krameri.*)
- ,, ,, var. *Alexandrae.*
- ,, ,, ,, *Colchesterense.*

End of June and in July.

- *Lilium Kelloggi.*
- ,, *Leichtlini.*
- ,, *longiflorum* and its varieties.
- ,, *Marhan.*
- ,, *maritimum.*
- ,, *Martagon* and varieties.
- ,, *medeoloides.*
- ,, *pardalinum* and varieties.
- ,, *Parryi.*
- ,, *parvum.*
- ,, *philadelphicum.*
- ,, *testaceum.*
- ,, *Washingtonianum.*
- ,, ,, ,, var. *rubescens*

End of July and during August and September.

- *Lilium auratum* and varieties.
- ,, *Berensi.*
- ,, *chalcedonicum.*
- ,, *elegans* var. *Batemanniæ.*
- ,, ,, ,, *venustum.*
- ,, ,, ,, *Wilsoni.*
- ,, *giganteum.*
- ,, *Henryi.*
- ,, *Kewense.*
- ,, *pardalinum Michauxi.*
- ,, *polyphyllum.*
- ,, *superbum.*
- ,, *tigrinum* and varieties

August, September and October.	*Lilium nepalense* *speciosum* and varieties. ,, *sulphureum*, in southern districts only. ,, *tigrinum Fortunei.*

CHAPTER XI

THE DURATION OF LILY FLOWERS

THE duration of Lily flowers depends, to some extent, upon the treatment the plants have received, and the nature of the weather during the flowering season, but even when allowance is made for this, the length of time the flowers of some species remain fresh and bright compared with others is very marked.

In some cases even the varieties of one species vary in this respect. An illustration of this is seen in the variety of *L. auratum*, known as *rubro-vittatum*, in which the golden band of the petal in the normal form is replaced by bright crimson. When the flower first expands, the glowing colour of this stripe, and its contrast with the rest of the flower is very marked, but in a couple of days, during hot weather, the crimson changes to a dull brownish hue, and much of the beauty of the flower is gone.

The pure unspotted form, on the other hand, known as *Wittei* or *virginale*, retains its freshness throughout the whole period of expansion, and is therefore attractive nearly twice as long as other varieties.

Of nearly related species of the Isolirion group, *L. bulbiferum*, *L. croceum*, and *L. dauricum*, the flowers of the two first named are considerably more lasting than the other, which soon becomes dull, but this is probably explainable by the thinner texture of the petals of *L. dauricum*.

Of the varieties of *L. elegans*, that known as *lateritium* or *biligulatum*, loses its colour quicker than any other of the red forms, and the bright tinted *pictum*, a yellow flower, flamed with red, owing to the flimsy substance of its petals, is not long attractive.

One can understand the lasting nature of *L. chalcedonicum*, as the petals are thick and wax-like in texture, and hot sunshine but little affects them.

The massive blooms of *L. Hansoni* quickly change colour and become disfigured if exposed to the full sun, and the same applies to the beautiful *L. Henryi*.

Rain, sunshine, and wind seem to have but little effect on *L. testaceum*, as the tall yet flexible stems yield to the breeze, and the petals remain fresh a long time even in weather bad for other Lilies. In this respect it surpasses the Madonna Lily (*L. candidum*), and doubtless inherits this good quality from its other parent *L. chalcedonicum*.

The varieties of *L. Martagon* last a long time owing to the thick wax-like petals which do not, as in the case of the closely-allied *L. Hansoni*, get so much burnt in the sun, though *dalmaticum* will bleach sometimes in very hot sun. All Lilies growing in shade or semi-shade last longer in flower than when fully exposed. The unpleasant odour of the flowers of many of the Martagon group is less pronounced when first expanded than it is later on.

L. Humboldti flowers during what is usually the hottest period of the year, yet when exposed to the direct rays of the mid-day sun, the orange coloured petals do not become paler in colour, but slightly deeper in tint Even in the middle of July the flowers often remain fresh for a fortnight when out of doors. This is one of the many beautiful points of this Lily, and it is a pity that it is one of the most capricious in its behaviour.

The Neilgherry Lily (*L. neilgherrense*) lasts fresh and bright for a fortnight or more, as it does not expand its flowers till October or November. *L. speciosum*, flowering as it does in the open air in late summer and early autumn, lasts a long time, but even an exceptionally hot September day will impair their beauty. Flowers of Lilies when cut will last longer in rooms if the water is changed daily, and a bit of the base of the stem cut off.

When cutting the flower stems for vases it is best to cut only the upper portion, so as to leave some foliage on the lower uncut part, to enable the bulb to complete its growth.

CHAPTER XII

POT CULTURE OF LILIES

Lilies of various kinds can be successfully grown in pots. Some are better adapted for this purpose than others, and grown in this way are valuable for the greenhouse, conservatory and room adornment.

Grown in the open air, such Lilies as *L. longiflorum* and allied kinds are liable when in full flower to be soon disfigured by heavy rains washing the pollen over the interior of the flower; but when grown in pots they can be more readily protected from the weather, and consequently last bright and fresh much longer than when exposed to sun and rain.

Moreover, the lovely varieties of *L. speciosum* during a sunless and cold autumn are too backward to expand their flowers properly in the open ground; but if in pots they can be removed under cover as soon as the nights become cold and damp, and in this way they will expand without a check.

A selection of Lilies for pot culture should include :—

*Lilium auratum.**	*Lilium japonicum.*
,, *Browni.**	,, *longiflorum.**
,, *concolor.*	,, *rubellum.*
,, *croceum.*	,, *speciosum.**
,, *dauricum.*	,, *tenuifolium.*
,, *elegans.*	,, *testaceum.*
,, *Hansoni.**	,, *tigrinum splendens.**
,, *Henryi.**	

Those marked * are the best.

THE GOLD-STRIPED LILY, L. AURATUM

(Finely spotted variety)

Those that need the protection of a greenhouse, except in favoured localities, and may be grown in pots or planted out in a bed in the greenhouse, include :—

Lilium Lowi.	*Lilium polyphyllum.*
,, *neilgherrense.*	,, *primulinum.*
,, *nepalense.*	,, *sulphureum.*
,, *philippinense.*	,, *Wallichianum.*

A few hints as to the treatment of Lilies in pots may be helpful as it is not the same in all cases.

L. auratum.—Bulbs imported from Japan are the most desirable for pots, and even these are apt to fail in an unaccountable way. As it is such a magnificent Lily it deserves exceptional attention.

The best bulbs reach this country about Christmas, and as soon as received, should be laid singly out of doors and covered with three or four inches of cocoa nut refuse, and a mat thrown over the bed if the weather is severe. The object of laying the bulbs out instead of potting them at once is the opportunity it affords for any incipient signs of decay to develop, after two or three weeks in contact with the moist covering the decayed parts can be more readily detected and removed than when the bulbs are dry, and this done the bulbs should be potted.

A suitable soil for pot culture of *L. auratum* is equal parts of loam and fibrous peat, with sufficient silver sand to render the compost friable.

For ordinary sized bulbs, pots five or six inches in diameter are very suitable ; while three bulbs can be put in an eight-inch pot, and more can be put in a proportionally larger pot or tub to form large specimens.

Pots should be clean and well drained, in the usual way. The bulb should be potted at such a depth that there is about an inch of soil over the top, and care must be taken to leave sufficient space for a top dressing of

good soil when the flower stem is developing, as a number of roots are pushed out just at its base, and if they are surrounded by nourishing soil the plant will develop into a finer specimen.

After potting, the pots may be placed out of doors and covered with cocoa-nut refuse, or they can be placed in a cold frame, which will protect from heavy rains. If the soil is kept slightly moist the bulbs will gradually root, and as they develop with growth, ample ventilation must be given.

By April the lights should only be used to ward off sharp frosts, but after that no protection is required.

In the case of those plunged outside in cocoa-nut refuse, care must be taken this be removed from the tops of the pots at the first signs of the growing shoots above the soil, otherwise the growths become bleached and weakened. A mat covering in frosty weather will be sufficient protection. During the summer and till the flowering time the best place for the pots is where they will be shaded from the full sun at mid-day. Watering well during all the stages of active growth is an essential condition for well grown plants.

Insect pests rarely if ever give any trouble in the case of this Lily, excepting green fly, which can be washed away out of the tips of the shoots.

The varieties *rubro-vittatum*, *Wittei* (*virginale*), and *macranthum* (*platyphyllum*) are more adapted for pot culture than the typical or common variety.

The details of growing *L. auratum* in pots apply to the species enumerated below.

L. Browni.—Grows best fully exposed to the sun, as full exposure deepens the beautiful chocolate tint of the outer surfaces of the petals. The same remarks apply to its variety *odorum Colchesterense*.

L. concolor.—This small growing species is most effective when three or four bulbs are put in a pot

five inches in diameter. It is quite hardy, and in a sheltered spot out of doors may be left till the flower buds are on the point of expanding.

L. croceum.—Being perfectly hardy may be potted and placed out of doors without protection beyond that afforded by a few leaves, or something of that nature.

The soil should be more loamy than for *L. auratum.*

Fair sized bulbs often push up two stems, and need pots five inches in diameter, while correspondingly larger pots are needed for more bulbs.

L. dauricum and its varieties may be treated in the same way as *L. croceum.*

L. elegans.—The bulbs of this Lily are small, so that three may be grown in a five-inch pot.

L. testaceum.—The soil for this Lily is the same as for *L. croceum*, and treated like *L. auratum.* Being a tall grower, it is best to put three or four bulbs in a large pot.

L. Hansoni.—The earliest of all the Turk's Cap Lilies, flowers well in pots. After potting, the pots should be placed in a cold frame or sheltered place, as it starts into growth so early, that unless protected, the young and delicate leaves are apt to be injured by frosts. When in flower this Lily should not be in full sun, as the petals lose their rich yellow colour.

L. Henryi.—Soil as for *L. croceum* in pot culture. The roots of this are very stout and vigorous, hence for even bulbs of moderate size, pots six inches in diameter are needed, and for larger bulbs, eight inch pots. After potting, treat the same as *L. auratum.* Though a good pot Lily, it is even better when planted out, as it delights in a free root run, and grows stems from eight to twelve feet high.

L. japonicum.—As a rule the bulbs are so small, that in most cases three can be put in a six inch pot. Soil and treatment of *L. auratum* suit it. When grown in pots

this Lily can only be regarded as of annual duration, for most of the bulbs either perish after flowering, or are so weakened, that they seldom recover sufficiently to flower again. The bulbs that can be relied on to flower are those imported direct from Japan, reaching here at the end or beginning of the year.

L. longiflorum.—This is undoubtedly the most popular of all Lilies for pot culture, and is now grown for flower markets in enormous quantities. The importations from Japan reach here in October or November, and those from Holland are received about the same time. Bermuda exports large quantities of the variety *Harrisi*, and as the season there is much earlier than ours, the dormant bulbs reach this country in August, and if potted with little delay, they flower during the early months of the new year. This Lily is also grown in South Africa, and the bulbs from there usually arrive about April, so even if potted as soon as received, they are later in flowering than those grown out of doors.

Retarded bulbs of this Lily can be grown to flower at any season, and this practice is dealt with in a separate chapter.

Ordinary-sized bulbs of *L. longiflorum* need a five inch pot, and three bulbs in a six, seven or eight inch pot, according to the size of the bulbs. This Lily and its varieties need a good open soil, with leaf mould or decayed manure in addition. A top-dressing of rich soil as the stem roots develop will be needed to obtain well-grown plants. The bulbs of the variety *Harrisi*, potted in August, may remain out of doors till the end of September, when a good, light airy place in the greenhouse or frame is best for them, as they enjoy light and air.

Japanese bulbs potted in October or November may remain out of doors till December, unless the weather is very severe.

THE ORANGE LILY, L. CROCEUM, IN A YORKSHIRE GARDEN

The Cape bulbs that reach here in spring are valued for late flowering. After potting they can be kept altogether out of doors, as by the time the shoots appear above the soil, the frosts will be over.

L. longiflorum is very liable to be attacked by Aphides or green fly, which, owing to their habit of collecting in the tips of the growing stems, often greatly injure the young buds before they are detected.

Under glass, fumigation, or, much better still, vaporising with the X. L. Vaporiser, will destroy the pest, but when growing out of doors they must be syringed with tobacco water, or one of the various insecticides. Tobacco powder, too, dusted into the crowns will keep the insects in check.

L. rubellum needs the same treatment as *L. japonicum* (*Krameri*), which it much resembles. It is, however, not so liable to perish after flowering in pots.

L. speciosum.—This is grown more largely as a pot plant than any other Lily excepting *L. longiflorum*. Its special value is for the greenhouse during the early summer and until it flowers naturally in the open air. It is altogether a satisfactory Lily for pots, as it may be kept in pots and flowered year after year without much trouble. Moreover, it is seldom attacked by disease or insect pests.

The bulbs from Holland reach this country about the end of October, and from Japan about the end or beginning of the year. They may be kept in a dormant condition by placing them in a moderately dry soil or sand in a frost-proof shed or cellar, and by thus retarding them, the grower is enabled to obtain a later succession of flowers than if the bulbs are started into growth as soon as received in December or January.

For early flowering it is best to pot permanently in October and November, and as the bulb scales are not so liable to decay as in *L. auratum*, there is no need to

prepare the bulbs by first placing them in cocoa-nut refuse as is advised for *L. auratum*.

When potting the bulbs it is necessary to leave sufficient room for a later top dressing of rich soil, as this Lily produces tufts of feeding roots at the bases of the stems, and these require nourishment as the stems grow. After potting the bulbs, the pots may be placed in the open air plunged in ashes, fibre-refuse, or leaves, and protected from frosts by mats, or placed in an unheated frame, where the bulbs will start into growth earlier and therefore flower before those not so protected. Any attempt to force this Lily into early flower by strong heat will result in the production of weak and often flowerless growths.

During summer the best place for the plants is the open air in partial shade unless flowering plants are required before the natural time of flowering in August and September, in which case the plants had better be kept under glass. When the nights become cold and there is much dampness in the air, the out-of-door plants should be removed to an unheated house or frame, otherwise the flower buds will not develop properly.

Sometimes in a cold and wet season the flower buds are unable to expand properly, but by separating by hand the points of the buds, the flowers will expand properly, but this delicate operation must be carefully done.

Lily bulbs that have been flowered in pots cannot, as a rule, be depended upon for flowering well a second year in pots, excepting such as *L. speciosum*, *Hansoni*, *Henryi* and *rubellum*, and the strong varieties of *L. longiflorum*.

In the case of those that flower well the second year in pots, it is best to turn the bulbs out of the pots when the stems have died away, and remove the old soil, cleaning the bulbs by picking off any decayed or decaying parts,

and repot them in fresh soil, using pots proportionate with the sizes of the bulbs. If there are signs of rotting, it is best not to repot at once, but place the bulbs for a time on a layer of powdered charcoal and sand, which will dry up the soft decayed parts and arrest decay.

Generally, there will be found bulblets at the bases of the parent bulbs; these should be removed and set aside for replanting, so as to form flowering bulbs in the course of time.

The Lilies that do not flower well the second year in pots are best planted in an open-air bed of light soil and a proportion of them will recover and develop sound flowering bulbs.

Tender Lilies in Pots.—The Lilies enumerated above as suitable for pot culture are all hardy, and grow well in the open air, but there are others that are essentially pot plants; that is, they cannot be successfully grown out of doors in this country, excepting in the most favoured localities. It is best to grow these entirely under glass in a cool greenhouse or frame.

Some are strong growing, and give very little trouble, beyond attention to watering, and freeing them of insect pests when they are attacked, but others are delicate, and require careful watching. Careless watering, either by keeping dry or over-watering, is generally the cause of failure.

These under-glass Lilies are all so beautiful, that they deserve special attention in culture.

These tender Lilies include:—

Lilium Lowi.	*Lilium polyphyllum.*
,, *neilgherrense.*	,, *primulinum.*
,, *nepalense.*	,, *sulphureum.*
,, *philippinense.*	,, *Wallichianum.*

Of these *L. sulphureum* is one of the most robust and beautiful, and in some parts will flower well in the open

air, but being so late in flowering it is, as a general rule, best to treat it as a pot plant.

L. polyphyllum also succeeds as an open air Lily in places, but it is always too expensive and rare to risk it under hardy Lily treatment.

L. philippinense is one of the few Lilies that require sub-tropical heat to bring it to perfection.

CHAPTER XIII

RETARDED LILIES

THE forcing of plants into flower earlier than the period of their natural flowering has always been practised by the gardener, but it is only in recent years that the opposite art of retarding plants so as to flower later than their natural flowering season has been discovered, and practised on a large scale.

This retardation is effected by storing the plants in refrigerators where a temperature only a little below the freezing point is maintained. This is sufficient to arrest active growth while not injuring the plants, and nowadays numerous kinds of plants are thus retarded. Among these are some of the Lilies, especially such as *L. longiflorum*, *auratum*, and *speciosum*, so that one may see in florists' shops during the autumn and onwards till Christmas or later, beautiful flowering plants of these lilies.

The treatment of retarded Lilies requires care. In the first place the bulbs are put in a cool cellar, where they are gradually thawed, as any sudden change of temperature is injurious. They are then potted in ordinary way, and placed either out of doors or in a part of the greenhouse, shaded from the full sun. They soon grow freely and flower well in due course. About three months is allowed from the potting to the flowering period.

Of the three species generally retarded *L. speciosum* responds to the treatment most successfully, *L. longi-*

florum is reliable under the system, but only a proportion of *L. auratum* can be depended on.

This novel practice is at present only carried out on a large scale by the growers for the flower markets, for as the freezing apparatus must be large and expensive, it is not practicable in private gardens at present.

LILIUM LONGIFLORUM AS A POT PLANT IN MAY

CHAPTER XIV

DISEASES AND INSECT PESTS

LILIES, in common with other plants, are liable to attacks of fungoid diseases and insect pests, besides other ailments, of which the precise nature or origin is not yet understood or unexplainable. Such cases, for example, in which a Lily dies away suddenly without apparent cause, have never been investigated.

The most virulent fungoid disease is that which attacks the Common White Lily, *L. candidum*, *L. testaceum*, *L. auratum*, and others. It is known as *Botrytis cinerea*, or commonly White Lily fungus. It is more or less a localised disease, being so virulent in some districts as to almost exterminate the Lily from gardens, while in other parts the disease is unknown.

It makes its appearance on the plants about the middle of May or earlier, and is seen on the leaves and stems as buff-coloured specks or blotches.

These marks indicate the spore masses of the fungus, and spread so rapidly over the plant that the leaves in a few days are lifeless. The vital parts of the plant being destroyed, no vigour remains in the plants to sustain the growing flower spikes, and even if the flower buds expand feebly, the flowers are poor and deformed. A long continuance of wet and cold weather during the early stages of growth seems to favour the disease.

Some observers are of the opinion that the fungus attacks only such plants that have suffered from cold winds in spring which tend to impair the health of the

plants, rendering them very prone to the attacks of the fungus.

There is much to be said in favour of this theory, but on the other hand, one often sees perfectly healthy plants with uninjured leaves at flowering time growing in cottage gardens in the eastern counties where the cold winds in spring and early summer are notorious.

Other observant growers assert as their opinion that the disease has been brought about by over manuring, and to support this theory they instance the fact that the White Lily is seen to greatest perfection and without disease in cottage gardens in which no manure is ever put on or in the soil.

The fact that the disease has been more rife since the White Lily has been imported and grown more largely for flower markets and in large private gardens than formerly tends rather to support the over manuring theory.

The writer of this book is of the opinion that the fungus disease is the result of the weakening of the constitution of the Lilies by cold, and over-stimulation by manuring, as similar instances of diseases in other plants are explainable in this way.

The White Lily and its very near relative or progeny, *L. testaceum*, are most liable to this fungus disease, but *L. auratum*, *L. chalcedonicum*, *L. croceum* and others are attacked also.

Various remedies for the White Lily disease have been suggested. One is to syringe the plant with a dilution of potassium sulphide, two ounces dissolved in three gallons of water. Another is to sprinkle or dust the foliage with flowers of sulphur, but in most cases such remedies, though they may arrest the spread of the disease do not eliminate it or restore the plant to healthy vigour when once badly attacked. Some growers sprinkle powdered sulphur on the bulbs thickly before

planting so as to kill the fungus germs, and this is a remedy worth trying, being so simple. The safest course is the drastic remedy of burning the plants and burying deeply the soil in which they have been growing, and so freeing the garden from any taint of disease. The new stock of bulbs should then be obtained from a source where disease has never been observed.

The most prevalent ailment of *L. auratum* is what is popularly called "sunstroke," for the want of a better term. This occurs mostly where the plants are growing in full sun. Suddenly the leaves droop and soon turn yellow, and drop together with the flower buds, if late in the season.

Plants so affected, if examined, may have the bulbs and roots perfectly sound, and this fact renders the malady more unexplainable.

So far as is known there is no remedy for this so called sunstroke, and the only course to take is to plant this Lily in places where it will be exposed to the sun throughout the day, but in partial shade, especially shade from the midday sun.

Lily diseases are now-a-days prevalent throughout all countries where Lilies are grown owing to the increased facilities for transmitting bulbs, and generally no precautions are taken to prevent the spread of disease in this way.

The White Lily bulbs, which are imported to this country in large quantities from the south of France, are so often infected with fungoid diseases that they are half decayed before received for planting.

The bulbs of *L. auratum* when sent from Japan are generally enveloped in a ball of clay, the object of this being to isolate the bulbs and so prevent decay spreading from decayed bulbs to others in the case. This is a sensible plan, as the decayed bulbs can be burnt as soon as unpacked.

A fungus which is particularly destructive to imported Japanese Lilies is known as *Rhizopus necans*. It is doubtless present in the soil before the bulbs leave Japan. It first attacks the roots, and then passes into the bulb, causing the base of the scales to decay. Care in lifting and packing seems to be the only way to minimise the effects of this disease.

A good deal can be done to ward off most Lily ailments by planting the bulbs under the most suitable conditions, and treating them in such a way previous to planting that they do not lose a great deal of their vitality before they are placed in the ground.

Insect pests as a rule give but little trouble, the principal being Aphides or green fly, which is very injurious to *L. longiflorum* under glass, and sometimes attacks them out of doors.

The insecticide known as the X. L. Vaporiser will quickly destroy them in the greenhouse, and in the open ground a little tobacco powder dusted into the crowns (choosing for the operations a showery evening) will soon clear them off, and other garden pests can be dealt with in a way known to all attentive gardeners.

CHAPTER XV

LIST OF SPECIES, VARIETIES AND SYNONYMS

THE following list is an index to the species of Lilies together with the names of the principal varieties. The synonyms of species and varieties according to the system followed at Kew are also given in the list.

The recognised species are preceded by a number followed by the named varieties. The synonyms and unauthoritative names that occur in catalogues are given without a preceding number.

Many names that were at one time applied to Lilies have been omitted, as they have either become obsolete or exist only in obscure botanical and gardening works.

The index as given here comprises all names that the cultivator is likely to find in the more recent botanical works or in trade catalogues, both here and abroad.

The popular names are given in cases where these are in general use, and in some of the Japanese species and varieties the vernacular name is given.

The native country or origin of each species is stated and the figures at the side of the page correspond with the page on which the name occurs.

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